```
In [1]: import Pkg
    Pkg.activate(@__DIR__)
    Pkg.instantiate()
    using LinearAlgebra, Plots
    import ForwardDiff as FD
    using Printf
    using JLD2
```

Activating environment at `/home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1
_S24/Project.toml`

Q2 (30 pts): Augmented Lagrangian Quadratic Program Solver

Part (A): QP Solver (10 pts)

Here we are going to use the augmented lagrangian method described https://www.youtube.com/watch?v=0x0JD5uO_ZQ), with thttps://github.com/Optimal-Control-16-745/lecture-notebooks-2022/blob/main/misc/AL_tutorial.pdf) to solve the following problem:

$$egin{array}{ll} \min_x & rac{1}{2} x^T Q x + q^T x \ \mathrm{s.t.} & A x - b = 0 \ G x - h \leq 0 \end{array}$$

where the cost function is described by $Q \in \mathbb{R}^{n \times n}$, $q \in \mathbb{R}^n$, an equality constraint is described by $A \in \mathbb{R}^{m \times n}$ and $b \in \mathbb{R}^m$, and an inequality constraint is described by $G \in \mathbb{R}^{p \times n}$ and $h \in \mathbb{R}^p$.

By introducing a dual variable $\lambda \in \mathbb{R}^m$ for the equality constraint, and $\mu \in \mathbb{R}^p$ for the inequality constraint, we have the following KKT conditions for optimality:

$$Qx+q+A^T\lambda+G^T\mu=0 \qquad ext{stationarity} \ Ax-b=0 \qquad ext{primal feasibility} \ Gx-h\leq 0 \qquad ext{primal feasibility} \ \mu\geq 0 \qquad ext{dual feasibility} \ \mu\odot(Gx-h)=0 \qquad ext{complementarity}$$

where o is element-wise multiplication.

```
In [2]: # TODO: read below
         # NOTE: DO NOT USE A WHILE LOOP ANYWHERE
         The data for the QP is stored in `qp` the following way:
             @load joinpath(@__DIR__, "qp_data.jld2") qp
         which is a NamedTuple, where
             Q, q, A, b, G, h = qp.Q, qp.q, qp.A, qp.b, qp.G, qp.h
         contains all of the problem data you will need for the QP.
         Your job is to make the following function
             x, \lambda, \mu = solve qp(qp; verbose = true, max iters = 100, tol = 1e-8)
         You can use (or not use) any of the additional functions:
         as long as solve qp works.
         function cost(qp::NamedTuple, x::Vector)::Real
             0.5*x'*qp.Q*x + dot(qp.q,x)
         end
         function c eq(qp::NamedTuple, x::Vector)::Vector
             qp.A*x - qp.b
         end
        function h_ineq(qp::NamedTuple, x::Vector)::Vector
             qp.G*x - qp.h
         end
         function lagrangian(qp::NamedTuple, x::Vector, λ::Vector, μ::Vector)::Real
             cost(qp,x) + \lambda'*c_eq(qp,x) + \mu'*h_ineq(qp,x)
         end
         function mask matrix(qp::NamedTuple, x::Vector, μ::Vector, ρ::Real)::Matrix
             M = h ineq(qp,x)
             I_{\rho} = 1.0*I(length(M))
             for ii = 1:length(M)
                 if M[ii]<0 && μ[ii]==0
                     I_{\rho}[ii,ii]=0
                 else
                     I_{o}[ii,ii]=\rho
                 end
             end
             return I<sub>p</sub>
         end
         function augmented_lagrangian(qp::NamedTuple, x::Vector, λ::Vector, μ::Vector,
         ρ::Real)::Real
             lagrangian(qp,x,\lambda,\mu) + \rho/2*c_eq(qp,x)'*c_eq(qp,x) + 1/2*h_ineq(qp,x)'*mask
         _matrix(qp,x,μ,ρ)*h_ineq(qp,x)
         function logging(qp::NamedTuple, main iter::Int, AL gradient::Vector, x::Vecto
         r, λ::Vector, μ::Vector, ρ::Real)
```

```
# TODO: stationarity norm
    stationarity_norm = norm(FD.gradient(_x \rightarrow lagrangian(qp,_x,\lambda,\mu),x))
    @printf("%3d % 7.2e % 7.2e % 7.2e % 7.2e % 7.2e % 5.0e\n",
          main iter, stationarity norm, norm(AL gradient), maximum(h ineq(qp,
x)),
          norm(c_eq(qp,x),Inf), abs(dot(\mu,h_ineq(qp,x))), \rho)
end
function solve_qp(qp; verbose = true, max_iters = 100, tol = 1e-8)
    x = zeros(length(qp.q))
    \lambda = zeros(length(qp.b))
    \mu = zeros(length(qp.h))
    \rho = 1
    \varphi = 2
    if verbose
        @printf "iter |\nabla L_x| |\nabla AL_x| max(h) |c| compl
\rho \ n"
        @printf "------
---\n"
    end
    kkt(_x) = FD.gradient(__x \rightarrow augmented_lagrangian(qp,__x,\lambda,\mu,p), _x)
    # TODO:
    for main_iter = 1:max_iters
        if verbose
             logging(qp, main_iter, kkt(x), x, \lambda, \mu, \rho)
        end
        # NOTE: when you do your dual update for \mu, you should compute
        # your element-wise maximum with `max.(a,b)`, not `max(a,b)`
        # TODO: convergence criteria based on tol
        if norm(kkt(x)) < tol</pre>
             return x, λ, μ
        end
        \Delta x = -(FD.jacobian(_x -> kkt(_x),x)) \setminus kkt(x)
        x = x + \Delta x
        \lambda += \rho * c eq(qp,x)
        \mu = \max(0, \mu + \rho * h_ineq(qp, x))
        \rho *= \phi
    error("qp solver did not converge")
end
let
    # example solving ap
    @load joinpath(@__DIR__, "qp_data.jld2") qp
    x, \lambda, \mu = solve_qp(qp; verbose = true, tol = 1e-8)
end
```

```
|\nabla L_{x}|
                   |\nabla AL_x|
iter
                               max(h)
                                           |c|
                                                       compl
                                                                 ρ
  1
      2.98e+01
                  5.60e+01
                              4.38e+00
                                          6.49e+00
                                                     0.00e+00
                                                                1e+00
  2
      4.83e+00
                  1.83e+01
                              1.55e+00
                                          1.31e+00
                                                     2.64e+00
                                                                2e+00
  3
                  8.70e+00
                              4.97e-02
                                                     3.12e-01
                                                                4e+00
      7.00e-01
                                         6.01e-01
                              3.78e-02
                                                     4.04e-02
  4
      2.39e-01
                  2.24e+00
                                         8.34e-02
                                                                8e+00
  5
      1.76e+00
                  5.20e+00
                              7.09e-02
                                         5.52e-03
                                                     3.69e-02
                                                                2e+01
  6
      4.51e-14
                  3.32e+00
                              1.56e-03
                                         2.71e-03
                                                     5.22e-06
                                                                3e+01
  7
      4.39e-14
                  9.80e-02
                             -2.16e-04
                                         3.36e-04
                                                     2.46e-04
                                                                6e+01
  8
      2.17e-13
                  4.77e-03
                            -5.77e-06
                                         1.25e-05
                                                     6.39e-06
                                                                1e+02
  9
      3.29e-13
                  1.42e-04
                            -8.10e-08
                                         1.94e-07
                                                     8.92e-08
                                                                3e+02
 10
      5.50e-13
                  2.18e-06
                            -6.05e-10
                                         1.48e-09
                                                     6.65e-10
                                                                5e+02
 11
      2.49e-12
                  1.70e-08
                            -2.31e-12
                                          5.70e-12
                                                     2.55e-12
                                                                1e+03
 12
      2.71e-12
                  6.09e-11
                            -4.44e-15
                                          1.11e-14
                                                     5.07e-15
                                                                2e+03
```

([-0.326230805713393, 0.24943797997175676, -0.43226766440522546, -1.417224697 1242008, -1.3994527400875794, 0.6099582408523462, -0.07312202122168004, 1.303 1477522000228, 0.5389034791065959, -0.7225813651685241], [-0.1283519512348898 5, -2.8376241672114153, -0.8320804499660779], [0.03635294263949618, 0.0, 0.0, 1.0594444951137387, 0.0])

QP Solver test

```
In [3]: # 10 points
    using Test
    @testset "qp solver" begin
        @load joinpath(@_DIR__, "qp_data.jld2") qp
        x, λ, μ = solve_qp(qp; verbose = true, max_iters = 100, tol = 1e-6)

    @load joinpath(@_DIR__, "qp_solutions.jld2") qp_solutions
    @test norm(x - qp_solutions.x,Inf)<1e-3;
    @test norm(λ - qp_solutions.λ,Inf)<1e-3;
    @test norm(μ - qp_solutions.μ,Inf)<1e-3;
end</pre>
```

```
|\nabla L_{x}|
iter
                    |\nabla AL_{\times}|
                               max(h)
                                           |c|
                                                       compl
                                                                  ρ
                              4.38e+00
      2.98e+01
                  5.60e+01
                                          6.49e+00
                                                      0.00e+00
  1
                                                                1e+00
  2
      4.83e+00
                  1.83e+01
                              1.55e+00
                                          1.31e+00
                                                      2.64e+00
                                                                2e+00
  3
      7.00e-01
                  8.70e+00
                              4.97e-02
                                          6.01e-01
                                                      3.12e-01
                                                                4e+00
  4
      2.39e-01
                  2.24e+00
                              3.78e-02
                                          8.34e-02
                                                      4.04e-02
                                                                8e+00
  5
                              7.09e-02
      1.76e+00
                  5.20e+00
                                          5.52e-03
                                                      3.69e-02
                                                                2e+01
  6
      4.51e-14
                  3.32e+00
                              1.56e-03
                                          2.71e-03
                                                      5.22e-06
                                                                3e+01
  7
      4.39e-14
                  9.80e-02
                            -2.16e-04
                                          3.36e-04
                                                      2.46e-04
                                                                6e+01
  8
      2.17e-13
                  4.77e-03
                             -5.77e-06
                                          1.25e-05
                                                      6.39e-06
                                                                1e+02
  9
                  1.42e-04
      3.29e-13
                            -8.10e-08
                                          1.94e-07
                                                      8.92e-08
                                                                3e+02
 10
      5.50e-13
                  2.18e-06
                            -6.05e-10
                                          1.48e-09
                                                      6.65e-10
                                                                5e+02
      2.49e-12
                  1.70e-08
 11
                            -2.31e-12
                                          5.70e-12
                                                      2.55e-12
                                                                1e+03
Test Summary: |
                 Pass Total
qp solver
                    3
```

Test.DefaultTestSet("qp solver", Any[], 3, false, false)

Simulating a Falling Brick with QPs

In this question we'll be simulating a brick falling and sliding on ice in 2D. You will show that this problem can be formulated as a QP, which you will solve using an Augmented Lagrangian method.

The Dynamics

The dynamics of the brick can be written in continuous time as

$$M\dot{v}+Mg=J^T\mu$$
 where $M=mI_{2 imes2},\;g=\left[egin{array}{c}0\9.81\end{array}
ight],\;J=\left[egin{array}{c}0&1\end{array}
ight]$

and $\mu\in\mathbb{R}$ is the normal force. The velocity $v\in\mathbb{R}^2$ and position $q\in\mathbb{R}^2$ are composed of the horizontal and vertical components.

We can discretize the dynamics with backward Euler: $\$ \begin{bmatrix} v_{k+1} \\ q_{k+1} \\ q_{k+1} \\ d_{k+1} \\ d_{k

\Delta t \cdot

$$\left[rac{1}{m}J^T\mu_{k+1}-g
ight]$$

\$\$

We also have the following contact constraints:

$$egin{aligned} Jq_{k+1} &\geq 0 & ext{ (don't fall through the ice)} \ \mu_{k+1} &\geq 0 & ext{ (normal forces only push, not pull)} \ \mu_{k+1}Jq_{k+1} &= 0 & ext{ (no force at a distance)} \end{aligned}$$

Part (B): QP formulation for Falling Brick (5 pts)

Show that these discrete-time dynamics are equivalent to the following QP by writing down the KKT conditions.

$$egin{aligned} ext{minimize}_{v_{k+1}} & & rac{1}{2} v_{k+1}^T M v_{k+1} + [M(\Delta t \cdot g - v_k)]^T v_{k+1} \ ext{subject to} & & -J(q_k + \Delta t \cdot v_{k+1}) \leq 0 \end{aligned}$$

TASK: Write down the KKT conditions for the optimization problem above, and show that it's equivalent to the dynamics problem stated previously. Use LaTeX markdown.

PUT ANSWER HERE:

KKT:

```
 \begin{array}{l} \langle \operatorname{textcolormagentaM} v_{k+1} + M(\Delta t \ g - v_k) - \Delta t \ J^T \ \mu_{k+1} \backslash \operatorname{textcolormagenta} = 0 \\ M \ v_{k+1} - M \ v_k = \Delta t [J^T \mu_{k+1} - M \ g] \\ \langle \operatorname{textcolor} lime v_{k+1} \backslash \operatorname{textcolor} lime = v_k + \Delta t \ \left[ \frac{1}{m} J^T \ \mu_{k+1} - v_k \right] \\ \langle \operatorname{textcolor} lime q_{k+1} \backslash \operatorname{textcolor} lime = q_k + \Delta t \ v_{k+1} \\ \langle \operatorname{textcolor} lime J \ q_{k+1} \backslash \operatorname{textcolor} lime \geq 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime \geq 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime \geq 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime \mu_{k+1} \backslash \operatorname{textcolor} lime = 0 \\ \langle \operatorname{textcolor} lime + u \backslash \operatorname{textcolor}
```

Part (C): Brick Simulation (5 pts)

```
In [4]: function brick_simulation_qp(q, v; mass = 1.0, \Delta t = 0.01)

# TODO: fill in the QP problem data for a simulation step
# fill in Q, q, G, h, but leave A, b the same
# this is because there are no equality constraints in this qp

g = [0,9.81]
J = [0 1]

qp = (
Q = Matrix(mass*I(2)),
q = Matrix(mass*I(2))*(\Delta t*g-v),
A = zeros(0,2), # don't edit this
b = zeros(0), # don't edit this
G = -\Delta t*J,
h = J*q
)

return qp
end
```

brick_simulation_qp (generic function with 1 method)

```
In [5]: @testset "brick qp" begin
            q = [1,3.0]
            v = [2, -3.0]
            qp = brick_simulation_qp(q,v)
            @show typeof(qp.Q)
            # check all the types to make sure they're right
            qp.Q::Matrix{Float64}
            qp.q::Vector{Float64}
            qp.A::Matrix{Float64}
            qp.b::Vector{Float64}
            qp.G::Matrix{Float64}
            qp.h::Vector{Float64}
            @test size(qp.Q) == (2,2)
            @test size(qp.q) == (2,)
            @test size(qp.A) == (0,2)
            @test size(qp.b) == (0,)
            @test size(qp.G) == (1,2)
            @test size(qp.h) == (1,)
            @test abs(tr(qp.Q) - 2) < 1e-10
            @test norm(qp.q - [-2.0, 3.0981]) < 1e-10</pre>
            @test norm(qp.G - [0 -.01]) < 1e-10
            @test abs(qp.h[1] -3) < 1e-10</pre>
        end
```

Test.DefaultTestSet("brick qp", Any[], 10, false, false)

```
In [6]: include(joinpath(@_DIR__, "animate_brick.jl"))
         let
             dt = 0.01
             T = 3.0
             t vec = 0:dt:T
             N = length(t_vec)
             qs = [zeros(2) for i = 1:N]
             vs = [zeros(2) for i = 1:N]
             qs[1] = [0, 1.0]
             vs[1] = [1, 4.5]
             # TODO: simulate the brick by forming and solving a qp
             # at each timestep. Your QP should solve for vs[k+1], and
             # you should use this to update qs[k+1]
             for ii = 2:N
                 qp = brick simulation qp(qs[ii-1], vs[ii-1]; \Delta t = dt)
                 vs[ii], \lambda, \mu = solve_qp(qp; verbose = true, max_iters = 100, tol = 1e-
         6)
                 qs[ii] = qs[ii-1]+dt*vs[ii]
             end
             xs = [q[1] \text{ for } q \text{ in } qs]
             ys = [q[2] for q in qs]
             @show @test abs(maximum(ys)-2)<1e-1
             @show @test minimum(ys) > -1e-2
             @show @test abs(xs[end] - 3) < 1e-2
             xdot = diff(xs)/dt
             @show @test maximum(xdot) < 1.0001</pre>
             @show @test minimum(xdot) > 0.9999
             @show @test ys[110] > 1e-2
             @show @test abs(ys[111]) < 1e-2
             @show @test abs(ys[112]) < 1e-2</pre>
             display(plot(xs, ys, ylabel = "y (m)", xlabel = "x (m)"))
             animate brick(qs)
         end
```

iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
1	4.51e+00	4.51e+00	-1.00e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.04e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.42e+00	4.42e+00	-1.04e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.09e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.32e+00	4.32e+00	-1.09e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.13e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	4.23e+00	4.23e+00	-1.13e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.17e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	4.13e+00	4.13e+00	-1.17e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.21e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.04e+00	4.04e+00	-1.21e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.25e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	3.94e+00	3.94e+00	-1.25e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.29e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	3.85e+00	3.85e+00	-1.29e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.32e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
		0.00e+00 ∇AL _×	-1.32e+00 -1.36e+00 max(h)	0.00e+00 c	0.00e+00	2e+00 ρ
2	3.66e+00 0.00e+00	3.66e+00 0.00e+00	-1.36e+00 -1.40e+00 max(h)	0.00e+00 0.00e+00	0.00e+00 0.00e+00	1e+00 2e+00 ρ
2	0.00e+00	0.00e+00	-1.40e+00 -1.43e+00 max(h)	0.00e+00	0.00e+00 0.00e+00	1e+00 2e+00
2	0.00e+00	0.00e+00	-1.43e+00 -1.46e+00 max(h)	0.00e+00	0.00e+00	2e+00
1	3.38e+00	3.38e+00	-1.46e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.50e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1 2	0.00e+00	3.28e+00 0.00e+00	-1.50e+00 -1.53e+00 max(h)	0.00e+00 0.00e+00	0.00e+00	1e+00 2e+00

1	3.19e+00	3.19e+00	-1.53e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.56e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	3.10e+00	3.10e+00	-1.56e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.59e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	3.00e+00	3.00e+00	-1.59e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.61e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	2.91e+00	2.91e+00	-1.61e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.64e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.82e+00	2.82e+00	-1.64e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.67e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.73e+00	2.73e+00	-1.67e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.69e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	2.64e+00	2.64e+00	-1.69e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.72e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	2.55e+00	2.55e+00	-1.72e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.74e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.46e+00	2.46e+00	-1.74e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.76e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.37e+00	2.37e+00	-1.76e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.79e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.28e+00	2.28e+00	-1.79e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.81e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.19e+00	2.19e+00	-1.81e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.83e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	2.10e+00	2.10e+00	-1.83e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.84e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	2.02e+00	2.02e+00	-1.84e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.86e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ

1	1.93e+00	1.93e+00	-1.86e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.88e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	1.85e+00	1.85e+00	-1.88e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.89e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.77e+00	1.77e+00	-1.89e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.91e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.69e+00	1.69e+00	-1.91e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.92e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.61e+00	1.61e+00	-1.92e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.93e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.54e+00	1.54e+00	-1.93e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.95e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.46e+00	1.46e+00	-1.95e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.96e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.39e+00	1.39e+00	-1.96e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.97e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.33e+00	1.33e+00	-1.97e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.98e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
2	0.00e+00	0.00e+00	-1.98e+00 -1.98e+00 max(h)	0.00e+00	0.00e+00	2e+00 ρ
1 2 iter	0.00e+00	0.00e+00	-1.98e+00	0.00e+00	0.00e+00 0.00e+00	1e+00 2e+00
2		0.00e+00	-1.99e+00 -2.00e+00 max(h)	0.00e+00	0.00e+00	2e+00
1 2 iter		1.11e+00 0.00e+00 ∇AL _x		0.00e+00 0.00e+00 c	0.00e+00	2e+00
2	0.00e+00	0.00e+00	-2.00e+00 -2.00e+00 max(h)	0.00e+00	0.00e+00	2e+00
1	1.04e+00	1.04e+00	-2.00e+00	0.00e+00	0.00e+00	1e+00

2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _×	max(h)	c	compl	ρ
1	1.02e+00	1.02e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.01e+00	1.01e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.02e+00	1.02e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.01e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.05e+00	1.05e+00	-2.01e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.00e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	1.08e+00	1.08e+00	-2.00e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.00e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	1.12e+00	1.12e+00	-2.00e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.99e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1 2 iter	1.17e+00 0.00e+00 ∇L _x	0.00e+00	-1.99e+00 -1.99e+00 max(h)	0.00e+00	0.00e+00 0.00e+00 compl	
1 2 iter	1.22e+00 0.00e+00 ∇L _x	0.00e+00		0.00e+00 0.00e+00 c	0.00e+00	1e+00 2e+00 ρ
2	1.28e+00 0.00e+00 ∇L _x	0.00e+00	-1.98e+00 -1.97e+00 max(h)	0.00e+00	0.00e+00 0.00e+00 compl	
1 2 iter		0.00e+00	-1.97e+00 -1.96e+00 max(h)			2e+00
1 2 iter	1.41e+00 0.00e+00 VL _x	0.00e+00	max(h)	0.00e+00	0.00e+00 compl	2e+00 ρ
1	1.48e+00		-1.95e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00		-1.94e+00	0.00e+00	0.00e+00	2e+00

iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
1	1.55e+00	1.55e+00	-1.94e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.93e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	1.63e+00	1.63e+00	-1.93e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.92e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	1.71e+00	1.71e+00	-1.92e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.90e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	1.79e+00	1.79e+00	-1.90e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.89e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	1.87e+00	1.87e+00	-1.89e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.87e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	1.96e+00	1.96e+00	-1.87e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.86e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	2.04e+00	2.04e+00	-1.86e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.84e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	2.13e+00	2.13e+00	-1.84e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.82e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
		0.00e+00	-1.80e+00	0.00e+00 0.00e+00 c		2e+00
2	0.00e+00	0.00e+00	-1.78e+00	0.00e+00 0.00e+00 c	0.00e+00	2e+00
2	0.00e+00	0.00e+00	-1.76e+00	0.00e+00 0.00e+00 c	0.00e+00	2e+00
2	0.00e+00	0.00e+00	-1.74e+00	0.00e+00 0.00e+00 c	0.00e+00	2e+00
	0.00e+00	0.00e+00	-1.71e+00	0.00e+00 0.00e+00 c	0.00e+00	2e+00 ρ
2	0.00e+00	0.00e+00	-1.69e+00	0.00e+00 0.00e+00 c	0.00e+00 0.00e+00	1e+00 2e+00

1	2.75e+00	2.75e+00	-1.69e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.66e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	2.84e+00	2.84e+00	-1.66e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.64e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	2.94e+00	2.94e+00	-1.64e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.61e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	3.03e+00	3.03e+00	-1.61e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.58e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	3.12e+00	3.12e+00	-1.58e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.55e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	3.21e+00	3.21e+00	-1.55e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.52e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	3.31e+00	3.31e+00	-1.52e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.49e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _×	∇AL _x	max(h)	c	compl	ρ
1	3.40e+00	3.40e+00	-1.49e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.46e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	3.49e+00	3.49e+00	-1.46e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.42e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	3.59e+00	3.59e+00	-1.42e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.39e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	3.68e+00	3.68e+00	-1.39e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.35e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	3.78e+00	3.78e+00	-1.35e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.32e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	3.87e+00	3.87e+00	-1.32e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.28e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _×	∇AL _x	max(h)	c	compl	ρ
1	3.97e+00	3.97e+00	-1.28e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.24e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ

1	4.06e+00	4.06e+00	-1.24e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.20e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.16e+00	4.16e+00	-1.20e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.16e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	4.25e+00	4.25e+00	-1.16e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.12e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	4.35e+00	4.35e+00	-1.12e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.08e+00	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	4.44e+00	4.44e+00	-1.08e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.03e+00	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	4.54e+00	4.54e+00	-1.03e+00	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-9.89e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1	4.63e+00	4.63e+00	-9.89e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-9.43e-01	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.73e+00	4.73e+00	-9.43e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-8.97e-01	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
1	4.83e+00	4.83e+00	-8.97e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-8.50e-01	0.00e+00	0.00e+00	2e+00
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
2	0.00e+00	0.00e+00	-8.50e-01 -8.02e-01 max(h)	0.00e+00 c	0.00e+00	2e+00 ρ
2	0.00e+00	0.00e+00	-8.02e-01 -7.52e-01 max(h)	0.00e+00 0.00e+00	0.00e+00 0.00e+00	1e+00 2e+00
2	0.00e+00	0.00e+00	-7.52e-01 -7.02e-01 max(h)	0.00e+00	0.00e+00	2e+00
2		0.00e+00	-7.02e-01 -6.51e-01 max(h)	0.00e+00	0.00e+00	2e+00
2	0.00e+00	0.00e+00 ∇AL _×	-6.51e-01 -5.99e-01 max(h)	0.00e+00 c	0.00e+00	2e+00
1	5.40e+00		-5.99e-01		0.00e+00	1e+00

2	0.00e+00	0.00e+00	-5.46e-01	0.00e+00	0.00e+00	2e+00
iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
1	5.50e+00	5.50e+00	-5.46e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-4.92e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	5.60e+00	5.60e+00	-4.92e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-4.37e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	5.69e+00	5.69e+00	-4.37e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-3.81e-01	0.00e+00	0.00e+00	2e+00
iter	∇L _x	VAL _x	max(h)	c	compl	ρ
1	5.79e+00	5.79e+00	-3.81e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-3.24e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	5.89e+00	5.89e+00	-3.24e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.66e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	5.98e+00	5.98e+00	-2.66e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.07e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	6.08e+00	6.08e+00	-2.07e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-1.47e-01	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	6.18e+00	6.18e+00	-1.47e-01	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-8.58e-02	0.00e+00	0.00e+00	2e+00
iter	VL _x	VAL _x	max(h)	c	compl	ρ
1	6.27e+00	6.27e+00	-8.58e-02	0.00e+00	0.00e+00	1e+00
2	0.00e+00	0.00e+00	-2.39e-02	0.00e+00	0.00e+00	2e+00
iter	VL _x	∇AL _x	max(h)	c	compl	ρ
1 2 3 4 5 6 7 8 9 10 11 12 13	6.37e+00 3.90e-04 2.56e-17 3.31e-16 3.55e-16 2.13e-16 1.08e-16 2.15e-16 3.61e-16 2.22e-16 4.44e-16 4.44e-16	6.37e+00 1.17e-03 1.56e-03 3.12e-03 6.23e-03 1.24e-02 2.48e-02 4.93e-02 9.73e-02 1.90e-01 3.61e-01 6.55e-01 1.09e+00	-2.39e-02 3.90e-02 3.90e-02 3.89e-02 3.89e-02 3.88e-02 3.85e-02 3.80e-02 3.53e-02 3.20e-02 2.66e-02	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	0.00e+00 1.52e-03 4.56e-03 1.06e-02 2.28e-02 4.69e-02 9.48e-02 1.89e-01 3.72e-01 7.15e-01 1.32e+00 2.24e+00 3.31e+00	1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
14	4.44e-16	1.54e+00	1.88e-02	0.00e+00	3.80e+00	8e+03
15	8.88e-16	1.70e+00	1.04e-02	0.00e+00	2.97e+00	2e+04
16	8.88e-16	1.29e+00	3.93e-03	0.00e+00	1.38e+00	3e+04
17	8.88e-16	6.01e-01	9.18e-04	0.00e+00	3.50e-01	7e+04
18	0.00e+00	1.59e-01	1.22e-04	0.00e+00	4.72e-02	1e+05

19	4.44e-16	2.26e-02	8.61e-06	0.00e+00	3.36e-03	3e+05
20	8.88e-16	1.66e-03	3.16e-07	0.00e+00	1.23e-04	5e+05
21	6.66e-15	6.21e-05	5.92e-09	0.00e+00	2.31e-06	1e+06
22	1.78e-15	1.17e-06	5.60e-11	0.00e+00	2.18e-08	2e+06
23	4.71e-14	1.11e-08	2.66e-13	0.00e+00	1.04e-10	4e+06
iter	∇L _x	∇AL _×	max(h)	c	compl	ρ
1	2.68e+00	2.68e+00	2.66e-13	0.00e+00	0.00e+00	1e+00
2	1.00e-16	4.98e-04	2.49e-02	0.00e+00	6.19e-04	2e+00
3	3.24e-17	9.95e-04	2.49e-02	0.00e+00	1.86e-03	4e+00
4	1.01e-16	1.99e-03	2.49e-02	0.00e+00	4.33e-03	8e+00
5	9.41e-17	3.98e-03	2.48e-02	0.00e+00	9.27e-03	2e+01
6	1.15e-16	7.94e-03	2.48e-02	0.00e+00	1.91e-02	3e+01
7	1.84e-16	1.58e-02	2.47e-02	0.00e+00	3.86e-02	6e+01
8	1.60e-16	3.15e-02	2.46e-02	0.00e+00	7.70e-02	1e+02
9	1.25e-16	6.21e-02	2.43e-02	0.00e+00	1.51e-01	3e+02
10	2.22e-16	1.21e-01	2.37e-02	0.00e+00	2.91e-01	5e+02
11 12	2.22e-16 5.55e-17	2.30e-01 4.18e-01	2.25e-02 2.04e-02	0.00e+00 0.00e+00	5.36e-01	1e+03
13	1.11e-16	4.18e-01 6.94e-01	1.69e-02	0.00e+00	9.13e-01 1.35e+00	2e+03
13 14	2.22e-16	9.85e-01	1.09e-02 1.20e-02	0.00e+00	1.55e+00	4e+03 8e+03
15	2.22e-16 2.22e-16	1.08e+00	6.61e-03	0.00e+00	1.33e+00 1.21e+00	2e+04
16	0.00e+00	8.21e-01	2.50e-03	0.00e+00	5.61e-01	3e+04
17	0.00c+00	3.84e-01	5.86e-04	0.00c+00	1.42e-01	7e+04
18	0.00c+00	1.02e-01	7.75e-05	0.00c+00	1.92e-02	1e+05
19	0.00e+00	1.44e-02	5.50e-06	0.00e+00	1.37e-03	3e+05
20	0.00e+00	1.06e-03	2.02e-07	0.00e+00	5.02e-05	5e+05
21	0.00e+00	3.96e-05	3.78e-09	0.00e+00	9.41e-07	1e+06
22	0.00e+00	7.49e-07	3.57e-11	0.00e+00	8.88e-09	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	3.57e-11	0.00e+00	0.00e+00	1e+00
2	1.23e-17	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3						
	5.98e-18	3.92e-05	9.81e-04		2.89e-06	4e+00
4	5.98e-18 6.57e-18	3.92e-05 7.84e-05	9.81e-04 9.80e-04	0.00e+00	2.89e-06 6.73e-06	4e+00 8e+00
4 5						
	6.57e-18	7.84e-05	9.80e-04	0.00e+00 0.00e+00	6.73e-06	8e+00
5	6.57e-18 5.31e-18	7.84e-05 1.57e-04	9.80e-04 9.80e-04	0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05	8e+00 2e+01
5 6	6.57e-18 5.31e-18 6.13e-18	7.84e-05 1.57e-04 3.13e-04	9.80e-04 9.80e-04 9.78e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05	8e+00 2e+01 3e+01
5 6 7	6.57e-18 5.31e-18 6.13e-18 1.95e-18	7.84e-05 1.57e-04 3.13e-04 6.24e-04	9.80e-04 9.80e-04 9.78e-04 9.75e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05	8e+00 2e+01 3e+01 6e+01
5 6 7 8 9 10	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
5 6 7 8 9 10 11	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
5 6 7 8 9 10 11 12	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
5 6 7 8 9 10 11 12 13	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
5 6 7 8 9 10 11 12 13 14	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
5 6 7 8 9 10 11 12 13 14 15	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
5 6 7 8 9 10 11 12 13 14 15 16	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 0.00e+00 1.39e-17	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04
5 6 7 8 9 10 11 12 13 14 15 16 17	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 0.00e+00 1.39e-17 1.39e-17 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
5 6 7 8 9 10 11 12 13 14 15 16 17 18	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 0.00e+00 1.39e-17	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 1.39e-17 1.39e-17 1.39e-17	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+04 3e+04 7e+04 1e+05 3e+05 5e+05
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 1.39e-17 1.39e-17 1.39e-17	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 2e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 1.39e-17 1.39e-17 1.39e-17	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+04 3e+04 7e+04 1e+05 3e+05 5e+05
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 1.39e-17 1.39e-17 1.39e-17 0.00e+00 VLx	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VALx	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 comp1	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 p
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	6.57e-18 5.31e-18 6.13e-18 1.95e-18 2.17e-18 6.51e-18 3.47e-18 0.00e+00 3.47e-18 0.00e+00 1.39e-17 1.39e-17 0.00e+00 1.39e-17 1.39e-17 1.39e-17 0.00e+00	7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VALx	9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
      5.75e-18
  3
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                 4e+00
  4
      1.08e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      2.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
                  3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      2.49e-18
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      1.08e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      4.55e-18
                              9.69e-04
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      8.67e-19
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      5.20e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      3.47e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      0.00e+00
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      0.00e+00
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                       2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      0.00e+00
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
 20
      1.39e-17
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      0.00e+00
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
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iter
       |\nabla L_{x}|
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                                max(h)
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                                                        compl
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      1.00e+00
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                                          0.00e+00
                                                      0.00e+00
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  1
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      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.05e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.13e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.76e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.45e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                 3e+01
  7
      1.08e-18
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.85e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      3.04e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      6.94e-18
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      6.94e-18
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      1.39e-17
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      0.00e+00
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      0.00e+00
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      1.39e-17
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      0.00e+00
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
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  1
                              1.41e-12
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  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	4 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V - x	VALX		1 ~ 1 		P
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
```

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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                               2.17e-07
                                                       2.12e-06
                   5.68e-04
                                           0.00e+00
                                                                   3e+05
 20
      0.00e+00
                   4.17e-05
                               7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
                   1.00e+00
                                                                   1e+00
  1
      1.00e+00
                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                   8e+00
  5
      1.71e-18
                   1.57e-04
                               9.80e-04
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      9.76e-19
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      5.42e-18
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                                                                   3e+02
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                                                                   5e+02
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                               8.87e-04
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                                                       8.33e-04
                                                                   1e+03
      3.47e-18
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                               8.05e-04
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                   2.74e-02
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                                           0.00e+00
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                                                                   8e+03
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                               2.60e-04
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                                                                   2e+04
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                   4.01e-03
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                               3.06e-06
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      1.39e-17
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                               7.96e-09
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                                                       7.81e-08
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                               1.49e-10
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                                                        1.46e-09
                                                                   1e+06
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                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
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                               1.41e-12
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                                                        0.00e+00
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                                                        2.89e-06
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 22
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                                           0.00e+00
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iter
        |\nabla L_{x}|
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                                max(h)
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                                                                  4e+00
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iter
       |\nabla L_{x}|
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                                                       2.89e-06
                                                                  4e+00
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                                                       6.73e-06
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                              9.80e-04
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                                                       1.44e-05
                                                                  2e+01
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                                                       2.97e-05
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 15
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 16
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                                                       2.21e-04
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 18
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 21
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 22
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                                                        compl
iter
       |\nabla L_{x}|
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                                max(h)
                                            |c|
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                                                                  4e+00
  4
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                                                       1.44e-05
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                                                       2.97e-05
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                                                                  6e+01
      5.42e-18
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9
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       |\nabla L_{x}|
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       |\nabla L_{\times}|
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                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03 4.77e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04 4.52e-04	3e+02 5e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                               max(h)
                                            |c|
                                                        compl
                                                                  ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
15
                                                                 2e+04
16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                               max(h)
                                            |c|
                                                        compl
                                                                  ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	1 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00c+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00c+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V = x	V \ \ \ \				
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
```

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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                               2.17e-07
                                                       2.12e-06
                   5.68e-04
                                           0.00e+00
                                                                   3e+05
 20
      0.00e+00
                   4.17e-05
                               7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
                   1.00e+00
                                                                   1e+00
  1
      1.00e+00
                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                   8e+00
  5
      1.71e-18
                   1.57e-04
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
      5.42e-18
                   1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                   1e+02
  9
      2.60e-18
                   2.45e-03
                               9.56e-04
                                                        2.35e-04
                                           0.00e+00
                                                                   3e+02
 10
      6.94e-18
                   4.77e-03
                               9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                   5e+02
 11
      6.94e-18
                   9.08e-03
                               8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                   1e+03
      3.47e-18
                   1.65e-02
 12
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
                   2.74e-02
                               6.68e-04
                                                       2.09e-03
 13
      0.00e+00
                                           0.00e+00
                                                                   4e+03
 14
      0.00e+00
                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                   8e+03
      0.00e+00
 15
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                   3e+04
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      1.39e-17
                   1.51e-02
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                                                        2.21e-04
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                   4.01e-03
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      0.00e+00
                               3.06e-06
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 19
      1.39e-17
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                                                       2.12e-06
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                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                   5e+05
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                                                                   1e+06
 22
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        |\nabla L_{x}|
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                               9.56e-04
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                               9.33e-04
                                           0.00e+00
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                               8.05e-04
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                               6.68e-04
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                                                        2.09e-03
                                                                   4e+03
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                               4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                   8e+03
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                               2.60e-04
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                                                       1.88e-03
                                                                   2e+04
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                               2.31e-05
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                                                                   7e+04
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                                                        7.81e-08
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 22
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                                           0.00e+00
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iter
        |\nabla L_{x}|
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                                                                  4e+00
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iter
       |\nabla L_{x}|
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 22
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iter
       |\nabla L_{x}|
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       |\nabla L_{\times}|
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 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04	3e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	4.52e-04 8.33e-04	5e+02 1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+04 3e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{\times}|
                    |\nabla AL_x|
                               max(h)
                                            |c|
                                                        compl
                                                                   ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	1 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00c+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00c+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V = x	V \ \ \ \		~ 		
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
```

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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                               2.17e-07
                                                        2.12e-06
                   5.68e-04
                                           0.00e+00
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 20
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                               7.96e-09
                                                        7.81e-08
                                           0.00e+00
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
                   1.00e+00
                                                                   1e+00
  1
      1.00e+00
                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
      1.71e-18
                   1.57e-04
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
      5.42e-18
                   1.24e-03
                               9.69e-04
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
      2.60e-18
                   2.45e-03
                               9.56e-04
                                                        2.35e-04
                                           0.00e+00
                                                                   3e+02
 10
      6.94e-18
                   4.77e-03
                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
      6.94e-18
                   9.08e-03
                               8.87e-04
                                           0.00e+00
                                                        8.33e-04
                                                                   1e+03
      3.47e-18
                   1.65e-02
 12
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
                   2.74e-02
                               6.68e-04
                                                        2.09e-03
 13
      0.00e+00
                                           0.00e+00
                                                                   4e+03
 14
      0.00e+00
                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                        2.40e-03
                                                                   8e+03
      0.00e+00
 15
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
                   4.01e-03
                                                        2.99e-05
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                           0.00e+00
                                                        2.12e-06
                                                                   3e+05
 20
      0.00e+00
                   4.17e-05
                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
  1
      1.00e+00
                   1.00e+00
                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
                                                                   1e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
      5.06e-18
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
                   1.57e-04
      1.71e-18
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
                               9.69e-04
      5.42e-18
                   1.24e-03
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
      2.60e-18
                   2.45e-03
                               9.56e-04
                                           0.00e+00
                                                        2.35e-04
                                                                   3e+02
 10
      6.94e-18
                   4.77e-03
                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
      6.94e-18
                   9.08e-03
                               8.87e-04
                                                        8.33e-04
                                                                   1e+03
                                           0.00e+00
 12
      3.47e-18
                   1.65e-02
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
 13
      0.00e+00
                   2.74e-02
                               6.68e-04
                                           0.00e+00
                                                        2.09e-03
                                                                   4e+03
 14
      0.00e+00
                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                        2.40e-03
                                                                   8e+03
 15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
      1.39e-17
                   1.51e-02
                               2.31e-05
                                                        2.21e-04
                                                                   7e+04
 17
                                           0.00e+00
                                           0.00e+00
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                                        2.12e-06
                                                                   3e+05
                                           0.00e+00
                   4.17e-05
 20
      0.00e+00
                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
```

```
0.00e+00
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                          0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
      5.06e-18
                                           0.00e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                              9.69e-04
                  1.24e-03
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
 12
      3.47e-18
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
                  3.23e-02
 16
      1.39e-17
                              9.87e-05
                                          0.00e+00
                                                       8.71e-04
                                                                  3e+04
                              2.31e-05
 17
      1.39e-17
                  1.51e-02
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
                  4.01e-03
                                                       2.99e-05
 18
      0.00e+00
                              3.06e-06
                                          0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
      5.06e-18
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                                       1.20e-04
                                           0.00e+00
                                                                  1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                                                       2.40e-03
                              4.74e-04
                                           0.00e+00
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
                                                                  3e+04
 16
                                          0.00e+00
                  1.51e-02
                              2.31e-05
 17
      1.39e-17
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
                                                        compl
iter
       |\nabla L_{x}|
                    \nabla AL_{\times}
                                max(h)
                                            |c|
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
      6.31e-18
                                          0.00e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                              9.80e-04
                                                       6.73e-06
                  7.84e-05
                                          0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
```

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9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
                                           0.00e+00
                                                                  2e+03
 13
                  2.74e-02
      0.00e+00
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
      0.00e+00
                  3.88e-02
                              4.74e-04
 14
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
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                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
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                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
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                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03 4.77e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04 4.52e-04	3e+02 5e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
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iter
       |\nabla L_{x}|
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                               max(h)
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      1.00e+00
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                                          0.00e+00
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  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _× 	max(h)	c 	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10 11	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
12	6.94e-18 3.47e-18	9.08e-03 1.65e-02	8.87e-04 8.05e-04	0.00e+00 0.00e+00	8.33e-04 1.42e-03	1e+03 2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00c+00	3.88e-02	4.74e-04	0.00c+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.00
1 2	1.00e+00 6.31e-18	1.00e+00 1.96e-05	1.41e-12 9.81e-04	0.00e+00 0.00e+00	0.00e+00 9.62e-07	1e+00 2e+00
3	5.06e-18	3.92e-05	9.81e-04 9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15 16	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00 0.00e+00	8.71e-04	3e+04
17 18	1.39e-17 0.00e+00	1.51e-02 4.01e-03	2.31e-05 3.06e-06	0.00e+00	2.21e-04 2.99e-05	7e+04 1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
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 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
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                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
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                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                               2.17e-07
                                                        2.12e-06
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                                           0.00e+00
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                               7.96e-09
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                                                                   5e+05
 21
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                   1.56e-06
                               1.49e-10
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                                                        1.46e-09
                                                                   1e+06
 22
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                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
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                   1.00e+00
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                               1.41e-12
                                           0.00e+00
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      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
      1.71e-18
                   1.57e-04
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
      5.42e-18
                   1.24e-03
                               9.69e-04
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
      2.60e-18
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                               9.56e-04
                                                        2.35e-04
                                           0.00e+00
                                                                   3e+02
 10
      6.94e-18
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                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
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                   9.08e-03
                               8.87e-04
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                                                        8.33e-04
                                                                   1e+03
      3.47e-18
                   1.65e-02
 12
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
                   2.74e-02
                               6.68e-04
                                                        2.09e-03
 13
      0.00e+00
                                           0.00e+00
                                                                   4e+03
 14
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                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                        2.40e-03
                                                                   8e+03
      0.00e+00
 15
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
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 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
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                   1.51e-02
                               2.31e-05
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                                                        2.21e-04
                                                                   7e+04
                   4.01e-03
                                                        2.99e-05
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                           0.00e+00
                                                        2.12e-06
                                                                   3e+05
 20
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                   4.17e-05
                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
      0.00e+00
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                               1.49e-10
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                                                        1.46e-09
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 22
      1.39e-17
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                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
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  1
      1.00e+00
                   1.00e+00
                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
                                                                   1e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
      5.06e-18
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
                   1.57e-04
      1.71e-18
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
                               9.69e-04
      5.42e-18
                   1.24e-03
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
      2.60e-18
                   2.45e-03
                               9.56e-04
                                           0.00e+00
                                                        2.35e-04
                                                                   3e+02
 10
      6.94e-18
                   4.77e-03
                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
      6.94e-18
                   9.08e-03
                               8.87e-04
                                                        8.33e-04
                                                                   1e+03
                                           0.00e+00
 12
      3.47e-18
                   1.65e-02
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
 13
      0.00e+00
                   2.74e-02
                               6.68e-04
                                           0.00e+00
                                                        2.09e-03
                                                                   4e+03
 14
      0.00e+00
                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                        2.40e-03
                                                                   8e+03
 15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
      1.39e-17
                   1.51e-02
                               2.31e-05
                                                        2.21e-04
                                                                   7e+04
 17
                                           0.00e+00
                                           0.00e+00
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                                        2.12e-06
                                                                   3e+05
                                           0.00e+00
                   4.17e-05
 20
      0.00e+00
                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{\times}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
```

```
0.00e+00
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                          0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
      5.06e-18
                                           0.00e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                              9.69e-04
                  1.24e-03
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
 12
      3.47e-18
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
                  3.23e-02
 16
      1.39e-17
                              9.87e-05
                                          0.00e+00
                                                       8.71e-04
                                                                  3e+04
                              2.31e-05
 17
      1.39e-17
                  1.51e-02
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
                  4.01e-03
                                                       2.99e-05
 18
      0.00e+00
                              3.06e-06
                                          0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
      5.06e-18
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                                       1.20e-04
                                           0.00e+00
                                                                  1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                                                       2.40e-03
                              4.74e-04
                                           0.00e+00
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
                                                                  3e+04
 16
                                          0.00e+00
                  1.51e-02
                              2.31e-05
 17
      1.39e-17
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
                                                        compl
iter
       |\nabla L_{\times}|
                    \nabla AL_{\times}
                                max(h)
                                            |c|
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
      6.31e-18
                                          0.00e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                              9.80e-04
                                                       6.73e-06
                  7.84e-05
                                          0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
```

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9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
                                           0.00e+00
                                                                  2e+03
 13
                  2.74e-02
      0.00e+00
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
      0.00e+00
                  3.88e-02
                              4.74e-04
 14
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03 4.77e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04 4.52e-04	3e+02 5e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                       2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                       2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                       2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{\times}|
                    |\nabla AL_{\times}|
                               max(h)
                                            |c|
                                                        compl
                                                                   ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	4 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V - x	VALX		1 ~ 1 		P
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
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                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
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                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
      1.39e-17
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                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
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                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
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                                                        2.12e-06
                   5.68e-04
                                           0.00e+00
                                                                   3e+05
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                               7.96e-09
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 21
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                   1.56e-06
                               1.49e-10
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                                                        1.46e-09
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 22
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                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
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                                max(h)
                                             |c|
                                                         compl
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                   1.00e+00
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                               1.41e-12
                                           0.00e+00
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      6.31e-18
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                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
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                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
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                   1.57e-04
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
      5.42e-18
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                               9.69e-04
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
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                               9.56e-04
                                                        2.35e-04
                                           0.00e+00
                                                                   3e+02
 10
      6.94e-18
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                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
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                   9.08e-03
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                                           0.00e+00
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                   1.65e-02
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                               8.05e-04
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                               6.68e-04
                                                        2.09e-03
 13
      0.00e+00
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                               4.74e-04
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                                                        2.40e-03
                                                                   8e+03
      0.00e+00
 15
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                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
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                                                        2.21e-04
                                                                   7e+04
                   4.01e-03
                                                        2.99e-05
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                           0.00e+00
                                                        2.12e-06
                                                                   3e+05
 20
      0.00e+00
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                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
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                               1.49e-10
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                                                        1.46e-09
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 22
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iter
        |\nabla L_{x}|
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                                max(h)
                                             |c|
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  1
      1.00e+00
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  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
      5.06e-18
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                        6.73e-06
                                                                   8e+00
  5
                   1.57e-04
      1.71e-18
                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
                   6.24e-04
                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
                               9.69e-04
      5.42e-18
                   1.24e-03
                                           0.00e+00
                                                        1.20e-04
                                                                   1e+02
  9
      2.60e-18
                   2.45e-03
                               9.56e-04
                                           0.00e+00
                                                        2.35e-04
                                                                   3e+02
 10
      6.94e-18
                   4.77e-03
                               9.33e-04
                                           0.00e+00
                                                        4.52e-04
                                                                   5e+02
 11
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                   9.08e-03
                               8.87e-04
                                                        8.33e-04
                                                                   1e+03
                                           0.00e+00
 12
      3.47e-18
                   1.65e-02
                               8.05e-04
                                           0.00e+00
                                                        1.42e-03
                                                                   2e+03
 13
      0.00e+00
                   2.74e-02
                               6.68e-04
                                           0.00e+00
                                                        2.09e-03
                                                                   4e+03
 14
      0.00e+00
                   3.88e-02
                               4.74e-04
                                           0.00e+00
                                                        2.40e-03
                                                                   8e+03
 15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
      1.39e-17
                   1.51e-02
                               2.31e-05
                                                        2.21e-04
                                                                   7e+04
 17
                                           0.00e+00
                                           0.00e+00
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                   5.68e-04
                               2.17e-07
                                                        2.12e-06
                                                                   3e+05
                                           0.00e+00
                   4.17e-05
 20
      0.00e+00
                               7.96e-09
                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{\times}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
```

```
0.00e+00
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                          0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
      5.06e-18
                                           0.00e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                              9.69e-04
                  1.24e-03
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
 12
      3.47e-18
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
                  3.23e-02
 16
      1.39e-17
                              9.87e-05
                                          0.00e+00
                                                       8.71e-04
                                                                  3e+04
                              2.31e-05
 17
      1.39e-17
                  1.51e-02
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
                  4.01e-03
                                                       2.99e-05
 18
      0.00e+00
                              3.06e-06
                                          0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
      5.06e-18
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                                       1.20e-04
                                           0.00e+00
                                                                  1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                                                       2.40e-03
                              4.74e-04
                                           0.00e+00
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
                                                                  3e+04
 16
                                          0.00e+00
                  1.51e-02
                              2.31e-05
 17
      1.39e-17
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
                                                        compl
iter
       |\nabla L_{\times}|
                    \nabla AL_{\times}
                                max(h)
                                            |c|
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
      6.31e-18
                                          0.00e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                              9.80e-04
                                                       6.73e-06
                  7.84e-05
                                          0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
```

```
9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
                                           0.00e+00
                                                                  2e+03
 13
                  2.74e-02
      0.00e+00
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
      0.00e+00
                  3.88e-02
                              4.74e-04
 14
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03 4.77e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04 4.52e-04	3e+02 5e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

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9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                       2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                       2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                       2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{\times}|
                    |\nabla AL_{\times}|
                               max(h)
                                            |c|
                                                        compl
                                                                   ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	4 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V - x	VALX		1 ~ 1 		P
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

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3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
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                              9.33e-04
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                                                       4.52e-04
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      6.94e-18
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                                                       2.09e-03
                                                                  4e+03
 14
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                              4.74e-04
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                                                       2.40e-03
                                                                  8e+03
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                                                       8.71e-04
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                               3.06e-06
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                                                                  1e+06
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                                           0.00e+00
                                                       1.38e-11
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iter
       |\nabla L_{x}|
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                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
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                              9.78e-04
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 11
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       |\nabla L_{x}|
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                                                       1.44e-05
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        |\nabla L_{x}|
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 21
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 22
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iter
        |\nabla L_{x}|
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iter
        |\nabla L_{\times}|
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       |\nabla L_{x}|
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                                max(h)
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                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                                       1.20e-04
                                           0.00e+00
                                                                  1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                                                       2.40e-03
                              4.74e-04
                                           0.00e+00
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
                                                                  3e+04
 16
                                          0.00e+00
                  1.51e-02
                              2.31e-05
 17
      1.39e-17
                                          0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
                                                        compl
iter
       |\nabla L_{\times}|
                    \nabla AL_{\times}
                                max(h)
                                            |c|
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
      6.31e-18
                                          0.00e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                              9.80e-04
                                                       6.73e-06
                  7.84e-05
                                          0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
```

```
9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
                                           0.00e+00
                                                                  2e+03
 13
                  2.74e-02
      0.00e+00
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
      0.00e+00
                  3.88e-02
                              4.74e-04
 14
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03 4.77e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04 4.52e-04	3e+02 5e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

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9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                               max(h)
                                            |c|
                                                        compl
                                                                   ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                 3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20			7.96e-09			
	0.00e+00	4.17e-05		0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
. 22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10.100
1	1.00e+00	1.00e+00 1.96e-05	1.41e-12	0.00e+00	0.00e+00	1e+00 2e+00
2	6.31e-18		9.81e-04	0.00e+00	9.62e-07	
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	4 00 .00	4 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15	0.00e+00	3.88e-02	4.74e-04 2.60e-04	0.00e+00 0.00e+00	2.40e-03 1.88e-03	8e+03
16	1.39e-17	4.27e-02 3.23e-02	9.87e-05	0.00e+00	8.71e-04	2e+04
17	1.39e-17 1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	3e+04 7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.21e-04 2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	ρ
	V - x	VALX		1 ~ 1 		P
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
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      6.51e-18
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                  2.45e-03
      2.60e-18
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                                                                  3e+02
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                              9.33e-04
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                                                                  5e+02
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                                                       8.33e-04
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                  1.65e-02
                              8.05e-04
                                                       1.42e-03
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 13
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                              4.74e-04
                                           0.00e+00
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                                                                  8e+03
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                               1.41e-12
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iter
       |\nabla L_{x}|
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                              9.81e-04
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                                                       9.62e-07
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                                           0.00e+00
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        |\nabla L_{x}|
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        |\nabla L_{x}|
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                                                        9.62e-07
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                                                        2.97e-05
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                                                        1.20e-04
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 21
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 22
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                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
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                                max(h)
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                                                         compl
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0.00e+00
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       |\nabla L_{x}|
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                                                        compl
iter
       |\nabla L_{x}|
                    \nabla AL_{\times}
                                max(h)
                                            |c|
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
      6.31e-18
                                          0.00e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                              9.80e-04
                                                       6.73e-06
                  7.84e-05
                                          0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
```

```
9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
                                           0.00e+00
                                                                  2e+03
 13
                  2.74e-02
      0.00e+00
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
      0.00e+00
                  3.88e-02
                              4.74e-04
 14
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04	3e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	4.52e-04 8.33e-04	5e+02 1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

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9.81e-04
                  3.92e-05
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                  7.84e-05
                              9.80e-04
                                          0.00e+00
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  5
      1.71e-18
                  1.57e-04
                              9.80e-04
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                              9.75e-04
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                                                                 2e+04
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                              9.87e-05
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                                                      8.71e-04
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      1.39e-17
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                                          0.00e+00
                                                      2.21e-04
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      1.39e-17
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                  3.92e-05
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                                          0.00e+00
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                  7.84e-05
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                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ - -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                       1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
	1 0000	1 0000	1 41- 12	0.0000	0.0000	100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	1 00 .00	1 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15		3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15 16	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03 8.71e-04	2e+04
16 17	1.39e-17 1.39e-17	3.23e-02 1.51e-02	9.87e-05 2.31e-05	0.00e+00 0.00e+00		3e+04 7e+04
18	0.00e+00	4.01e-02	3.06e-06	0.00e+00	2.21e-04 2.99e-05	
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	1e+05 3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	
22	1.39e-17	2.95e-08	1.49e-10 1.41e-12	0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	
	V - x	V M L x		151 		ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
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      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
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      0.00e+00
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                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
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                                                                  8e+00
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      1.71e-18
                  1.57e-04
                              9.80e-04
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                                                                  2e+01
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                              9.78e-04
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                                                                  3e+01
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      9.76e-19
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                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
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      5.42e-18
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                              9.69e-04
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                              9.56e-04
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                                                       2.35e-04
                                                                  3e+02
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                  4.77e-03
                              9.33e-04
                                                       4.52e-04
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                                                                  5e+02
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                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
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                               2.60e-04
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                                                                   2e+04
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      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                   3e+04
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                                                        2.21e-04
                                                                   7e+04
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                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
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      1.39e-17
                               2.17e-07
                                                       2.12e-06
                   5.68e-04
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                                                                   3e+05
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                               7.96e-09
                                                       7.81e-08
                                           0.00e+00
                                                                   5e+05
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      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
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                                max(h)
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                                                         compl
                                                                    ρ
                   1.00e+00
                                                                   1e+00
  1
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                               1.41e-12
                                           0.00e+00
                                                        0.00e+00
  2
      6.31e-18
                   1.96e-05
                               9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
                                           0.00e+00
                                                        2.89e-06
                                                                   4e+00
  4
      8.40e-19
                   7.84e-05
                               9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                   8e+00
  5
      1.71e-18
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                               9.80e-04
                                           0.00e+00
                                                        1.44e-05
                                                                   2e+01
  6
      6.51e-18
                   3.13e-04
                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
                                                                   3e+01
  7
      9.76e-19
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                               9.75e-04
                                           0.00e+00
                                                        6.00e-05
                                                                   6e+01
  8
      5.42e-18
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                                                                   1e+02
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                                                                   3e+02
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                               9.33e-04
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                                                       4.52e-04
                                                                   5e+02
 11
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                                                        1.42e-03
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 13
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                                                                   4e+03
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                                                       2.40e-03
                                                                   8e+03
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 15
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                                           0.00e+00
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                               9.87e-05
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                                                        2.21e-04
                                                                   7e+04
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                                                        2.99e-05
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                               3.06e-06
                                           0.00e+00
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 19
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                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                   3e+05
 20
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                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                   5e+05
 21
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                                                        1.46e-09
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 22
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                                           0.00e+00
                                                        1.38e-11
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iter
        |\nabla L_{x}|
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                                             |c|
                                                         compl
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                               1.41e-12
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                                           0.00e+00
                                                       9.62e-07
                                                                   2e+00
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                                           0.00e+00
                                                        2.89e-06
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                                                       6.73e-06
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  5
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      1.71e-18
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                                                        1.44e-05
                                                                   2e+01
  6
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                               9.78e-04
                                           0.00e+00
                                                        2.97e-05
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  7
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                               9.75e-04
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                                                        6.00e-05
                                                                   6e+01
  8
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                                           0.00e+00
                                                       1.20e-04
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                               9.56e-04
                                           0.00e+00
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 10
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                               9.33e-04
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 11
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                                                                   1e+03
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 12
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                                                        1.42e-03
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                               6.68e-04
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                                                        2.09e-03
                                                                   4e+03
 14
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                               4.74e-04
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                                                       2.40e-03
                                                                   8e+03
 15
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                               2.60e-04
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                                                       1.88e-03
                                                                   2e+04
 16
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                               9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                   3e+04
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                               2.31e-05
                                                        2.21e-04
                                                                   7e+04
 17
                                           0.00e+00
                                           0.00e+00
 18
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                   4.01e-03
                               3.06e-06
                                                        2.99e-05
                                                                   1e+05
 19
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                               2.17e-07
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                                                                   3e+05
                                           0.00e+00
                   4.17e-05
 20
      0.00e+00
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                                           0.00e+00
                                                        7.81e-08
                                                                   5e+05
 21
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                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
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                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
```

```
0.00e+00
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                          0.00e+00
                                                                  1e+00
  2
      6.31e-18
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                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                                       2.89e-06
                                                                  4e+00
      5.06e-18
                                           0.00e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
                  1.57e-04
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      1.71e-18
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                                                       1.44e-05
                                                                  2e+01
  6
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                                          0.00e+00
                                                       2.97e-05
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  7
      9.76e-19
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  8
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                                                       1.20e-04
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  9
      2.60e-18
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                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
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 10
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                                           0.00e+00
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 11
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                                          0.00e+00
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                                          0.00e+00
                                                       1.42e-03
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                                                                  2e+03
 13
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                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
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                                                       1.88e-03
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 16
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                                                                  7e+04
                  4.01e-03
                                                       2.99e-05
 18
      0.00e+00
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                                          0.00e+00
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 19
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                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
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                               7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
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                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
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                               1.41e-12
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                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
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                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
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  2
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                              9.81e-04
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                                                       9.62e-07
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                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
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                              9.78e-04
                                          0.00e+00
                                                       2.97e-05
                                                                  3e+01
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                                                       6.00e-05
                                                                  6e+01
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      2.60e-18
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                                                       2.35e-04
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                                                       1.42e-03
                                                                  2e+03
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                                                       2.09e-03
                                                                  4e+03
 14
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                              4.74e-04
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                                                                  8e+03
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                              9.87e-05
                                                       8.71e-04
                                                                  3e+04
 16
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 17
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                                                       2.21e-04
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 18
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                              3.06e-06
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                                                                  1e+05
 19
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                              2.17e-07
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                                                       2.12e-06
                                                                  3e+05
 20
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                              7.96e-09
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                                                                  5e+05
 21
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                                                       1.46e-09
                                                                  1e+06
 22
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                                                        compl
iter
       |\nabla L_{x}|
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                                max(h)
                                            |c|
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                              9.81e-04
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                                                       9.62e-07
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      6.31e-18
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                                                                  4e+00
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                              9.80e-04
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                                                                  8e+00
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      1.71e-18
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                                                       1.44e-05
                                                                  2e+01
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                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
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                                                                  6e+01
      5.42e-18
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      6.94e-18
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                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
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                              8.87e-04
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                                                                  1e+03
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                              8.05e-04
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                              6.68e-04
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                                                                  8e+03
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                                                       1.88e-03
                                                                  2e+04
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 16
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                                                       2.99e-05
                              3.06e-06
                                           0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                                       7.81e-08
                                          0.00e+00
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_x|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
                              9.81e-04
      5.06e-18
                  3.92e-05
                                          0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04	3e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	4.52e-04 8.33e-04	5e+02 1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
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                                                                 8e+03
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 15
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                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
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 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
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                              1.49e-10
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                                                      1.46e-09
                                                                 1e+06
 22
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iter
       |\nabla L_{x}|
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      1.00e+00
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                              9.81e-04
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                                                      9.62e-07
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                                          0.00e+00
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  4
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                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
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  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
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  7
      9.76e-19
                  6.24e-04
                              9.75e-04
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                                                      6.00e-05
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  8
      5.42e-18
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                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
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                  2.45e-03
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      2.60e-18
                                          0.00e+00
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 10
      6.94e-18
                  4.77e-03
                              9.33e-04
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                                                                 5e+02
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 11
      6.94e-18
                                          0.00e+00
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 12
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                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
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      0.00e+00
                  4.27e-02
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                                          0.00e+00
                                                      1.88e-03
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                                                                 2e+04
 16
      1.39e-17
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                              9.87e-05
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                                                      8.71e-04
                                                                 3e+04
 17
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                  1.51e-02
                              2.31e-05
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                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
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                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
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iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ - -
      1.00e+00
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                                          0.00e+00
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                              1.41e-12
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  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
	1 0000	1 0000	1 41- 12	0.0000	0.0000	100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	1 00 .00	1 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15		3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15 16	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03 8.71e-04	2e+04
16 17	1.39e-17 1.39e-17	3.23e-02 1.51e-02	9.87e-05 2.31e-05	0.00e+00 0.00e+00		3e+04 7e+04
18	0.00e+00	4.01e-02	3.06e-06	0.00e+00	2.21e-04 2.99e-05	
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	1e+05 3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	
22	1.39e-17	2.95e-08	1.49e-10 1.41e-12	0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	
	V - x	V M L x		151 		ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
```

```
15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                   2e+04
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        |\nabla L_{x}|
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                                                                   3e+02
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                                                                   4e+03
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                                                       2.40e-03
                                                                   8e+03
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                               3.06e-06
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 22
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        |\nabla L_{x}|
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iter
        |\nabla L_{x}|
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                                                                  4e+00
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iter
       |\nabla L_{x}|
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                                                       6.73e-06
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iter
       |\nabla L_{x}|
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                                                                  1e+03
                  1.65e-02
                              8.05e-04
 12
      3.47e-18
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
 15
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
                  1.51e-02
                              2.31e-05
      1.39e-17
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00c+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	∇L _×	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9 10	2.60e-18	2.45e-03	9.56e-04 9.33e-04	0.00e+00 0.00e+00	2.35e-04	3e+02
11	6.94e-18 6.94e-18	4.77e-03 9.08e-03	8.87e-04	0.00e+00	4.52e-04 8.33e-04	5e+02 1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00c+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
iter 	∇L _×	∇AL _×	max(h)	c 	compl	ρ
iter 1	∇L _x 1.00e+00	∇AL _× 1.00e+00	max(h) 1.41e-12	c 0.00e+00	compl 0.00e+00	ρ 1e+00
iter 1 2	∇L _x 1.00e+00 6.31e-18	∇AL _× 1.00e+00 1.96e-05	max(h) 1.41e-12 9.81e-04	c 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07	ρ 1e+00 2e+00
iter 1	VL _x 1.00e+00 6.31e-18 5.06e-18	∇AL _x 1.00e+00 1.96e-05 3.92e-05	max(h) 1.41e-12 9.81e-04 9.81e-04	c 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06	ρ 1e+00 2e+00 4e+00
iter 1 2 3 4	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19	∇AL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06	ρ 1e+00 2e+00 4e+00 8e+00
iter 1 2 3 4 5	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01
iter 1 2 3 4 5 6	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01
iter 1 2 3 4 5 6 7	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02
iter 1 2 3 4 5 6 7 8 9	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02
iter 1 2 3 4 5 6 7 8 9 10	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02
iter 1 2 3 4 5 6 7 8 9 10 11	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18	VAL _x 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.33e-04 8.87e-04 8.05e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 6.68e-04	c 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	VL _x 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04	c 0.00e+00	compl 	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	VLx 1.00e+00 6.31e-18 5.06e-18 8.40e-19 1.71e-18 6.51e-18 9.76e-19 5.42e-18 2.60e-18 6.94e-18 3.47e-18 0.00e+00 0.00e+00 1.39e-17	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.69e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 4e+03 8e+04 7e+04 1e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+02 1e+03 2e+03 4e+03 8e+03 2e+04 7e+04 1e+05 3e+05 5e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	P 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 4e+03 8e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 iter	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.80e-04 9.75e-04 9.56e-04 9.56e-04 8.87e-04 8.05e-04 6.68e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11 compl	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 1e+02 3e+02 1e+03 2e+03 4e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06 ρ
iter 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	VLx	VAL 1.00e+00 1.96e-05 3.92e-05 7.84e-05 1.57e-04 3.13e-04 6.24e-04 1.24e-03 2.45e-03 4.77e-03 9.08e-03 1.65e-02 2.74e-02 3.88e-02 4.27e-02 3.23e-02 1.51e-02 4.01e-03 5.68e-04 4.17e-05 1.56e-06 2.95e-08 VAL	max(h) 1.41e-12 9.81e-04 9.81e-04 9.80e-04 9.78e-04 9.75e-04 9.56e-04 9.33e-04 8.87e-04 8.05e-04 4.74e-04 2.60e-04 9.87e-05 2.31e-05 3.06e-06 2.17e-07 7.96e-09 1.49e-10 1.41e-12 max(h)	c 0.00e+00	compl 0.00e+00 9.62e-07 2.89e-06 6.73e-06 1.44e-05 2.97e-05 6.00e-05 1.20e-04 2.35e-04 4.52e-04 8.33e-04 1.42e-03 2.09e-03 2.40e-03 1.88e-03 8.71e-04 2.21e-04 2.99e-05 2.12e-06 7.81e-08 1.46e-09 1.38e-11	ρ 1e+00 2e+00 4e+00 8e+00 2e+01 3e+01 6e+01 1e+02 3e+02 5e+03 2e+03 2e+03 2e+03 3e+03 2e+04 3e+04 7e+04 1e+05 3e+05 5e+05 1e+06 2e+06

```
9.81e-04
                  3.92e-05
  3
      5.06e-18
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                                      2.97e-05
                                          0.00e+00
                                                                 3e+01
  7
                  6.24e-04
                              9.75e-04
      9.76e-19
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
                              9.69e-04
      5.42e-18
                  1.24e-03
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                      1.42e-03
                                          0.00e+00
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                                      2.09e-03
                                          0.00e+00
                                                                 4e+03
      0.00e+00
 14
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
                  4.27e-02
 15
      0.00e+00
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                                      2.99e-05
                                          0.00e+00
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                              2.17e-07
                                          0.00e+00
                                                      2.12e-06
                                                                 3e+05
      0.00e+00
 20
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                               max(h)
                                            |c|
                                                        compl
                                                                   ρ
      1.00e+00
                  1.00e+00
                              1.41e-12
                                          0.00e+00
                                                      0.00e+00
                                                                 1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                 2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
                  2.45e-03
                              9.56e-04
      2.60e-18
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                 5e+02
                  9.08e-03
                              8.87e-04
 11
      6.94e-18
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
      3.47e-18
 12
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                      1.42e-03
                                                                 2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                          0.00e+00
                                                      2.09e-03
                                                                 4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                          0.00e+00
                                                      2.40e-03
                                                                 8e+03
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                      1.88e-03
 15
                                                                 2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                          0.00e+00
                                                      8.71e-04
                                                                 3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                          0.00e+00
                                                      2.21e-04
                                                                 7e+04
 18
      0.00e+00
                  4.01e-03
                              3.06e-06
                                          0.00e+00
                                                      2.99e-05
                                                                 1e+05
 19
      1.39e-17
                  5.68e-04
                                                      2.12e-06
                              2.17e-07
                                          0.00e+00
                                                                 3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                          0.00e+00
                                                      7.81e-08
                                                                 5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                          0.00e+00
                                                      1.46e-09
                                                                 1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                          0.00e+00
                                                      1.38e-11
                                                                 2e+06
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
iter
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
_ _ _ - -
      1.00e+00
                  1.00e+00
                                          0.00e+00
                                                                 1e+00
  1
                              1.41e-12
                                                      0.00e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                      9.62e-07
                                                                  2e+00
  3
                  3.92e-05
                              9.81e-04
                                          0.00e+00
      5.06e-18
                                                      2.89e-06
                                                                 4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                          0.00e+00
                                                      6.73e-06
                                                                 8e+00
  5
                  1.57e-04
                              9.80e-04
      1.71e-18
                                          0.00e+00
                                                      1.44e-05
                                                                 2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                          0.00e+00
                                                      2.97e-05
                                                                 3e+01
  7
                              9.75e-04
      9.76e-19
                  6.24e-04
                                          0.00e+00
                                                      6.00e-05
                                                                 6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                      1.20e-04
                                                                 1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                          0.00e+00
                                                      2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                          0.00e+00
                                                      4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                          0.00e+00
                                                      8.33e-04
                                                                 1e+03
```

12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00c+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.43e-10 1.41e-12	0.00e+00	1.40e-03	2e+06
iter	∇L _×	$ \nabla AL_x $	max(h)	c	compl	ρ
1	1 000100	1 000100	1 410 12	0 000100	0 000100	10100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00c+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	∇AL _×	max(h)	c	compl	ρ
	1 0000	1 0000	1 41- 12	0.0000	0.0000	100
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
20	0.000	4.1/6-03	7.300-03	0.000	1.01E-00	JETUJ

21 22	0.00e+00 1.39e-17	1.56e-06 2.95e-08	1.49e-10 1.41e-12	0.00e+00 0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14	0.00e+00	3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03	2e+04
16	1.39e-17	3.23e-02	9.87e-05	0.00e+00	8.71e-04	3e+04
17	1.39e-17	1.51e-02	2.31e-05	0.00e+00	2.21e-04	7e+04
18	0.00e+00	4.01e-03	3.06e-06	0.00e+00	2.99e-05	1e+05
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	1e+06
22	1.39e-17	2.95e-08	1.41e-12	0.00e+00	1.38e-11	2e+06
iter	$ \nabla L_{x} $	$ \nabla AL_{\times} $	max(h)	c	compl	ρ
	1 00 .00	1 00 .00				4 .00
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01
6	6.51e-18	3.13e-04	9.78e-04	0.00e+00	2.97e-05	3e+01
7	9.76e-19	6.24e-04	9.75e-04	0.00e+00	6.00e-05	6e+01
8	5.42e-18	1.24e-03	9.69e-04	0.00e+00	1.20e-04	1e+02
9	2.60e-18	2.45e-03	9.56e-04	0.00e+00	2.35e-04	3e+02
10	6.94e-18	4.77e-03	9.33e-04	0.00e+00	4.52e-04	5e+02
11	6.94e-18	9.08e-03	8.87e-04	0.00e+00	8.33e-04	1e+03
12	3.47e-18	1.65e-02	8.05e-04	0.00e+00	1.42e-03	2e+03
13	0.00e+00 0.00e+00	2.74e-02	6.68e-04	0.00e+00	2.09e-03	4e+03
14 15		3.88e-02	4.74e-04	0.00e+00	2.40e-03	8e+03
15 16	0.00e+00	4.27e-02	2.60e-04	0.00e+00	1.88e-03 8.71e-04	2e+04
16 17	1.39e-17 1.39e-17	3.23e-02 1.51e-02	9.87e-05 2.31e-05	0.00e+00 0.00e+00		3e+04 7e+04
18	0.00e+00	4.01e-02	3.06e-06	0.00e+00	2.21e-04 2.99e-05	
19	1.39e-17	5.68e-04	2.17e-07	0.00e+00	2.12e-06	1e+05 3e+05
20	0.00e+00	4.17e-05	7.96e-09	0.00e+00	7.81e-08	5e+05
21	0.00e+00	1.56e-06	1.49e-10	0.00e+00	1.46e-09	
22	1.39e-17	2.95e-08	1.49e-10 1.41e-12	0.00e+00	1.46e-09 1.38e-11	1e+06 2e+06
iter	∇L _x	∇AL _x	max(h)	c	compl	
	V - x	V M L x		151 		ρ
1	1.00e+00	1.00e+00	1.41e-12	0.00e+00	0.00e+00	1e+00
2	6.31e-18	1.96e-05	9.81e-04	0.00e+00	9.62e-07	2e+00
3	5.06e-18	3.92e-05	9.81e-04	0.00e+00	2.89e-06	4e+00
4	8.40e-19	7.84e-05	9.80e-04	0.00e+00	6.73e-06	8e+00
5	1.71e-18	1.57e-04	9.80e-04	0.00e+00	1.44e-05	2e+01

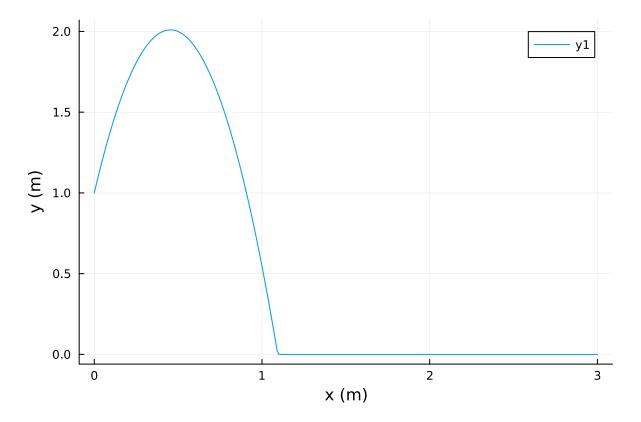
```
3.13e-04
                              9.78e-04
                                                       2.97e-05
  6
      6.51e-18
                                           0.00e+00
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                               9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                                       2.35e-04
                                                                  3e+02
                                           0.00e+00
                  4.77e-03
                              9.33e-04
 10
      6.94e-18
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
 11
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
                  4.27e-02
                               2.60e-04
                                                                  2e+04
      0.00e+00
                                           0.00e+00
                                                       1.88e-03
      1.39e-17
                  3.23e-02
                              9.87e-05
                                                       8.71e-04
 16
                                           0.00e+00
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
 18
      0.00e+00
                               3.06e-06
                                           0.00e+00
                                                       2.99e-05
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                                       1.46e-09
                                           0.00e+00
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                               1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                              9.80e-04
      8.40e-19
                  7.84e-05
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
                              9.78e-04
  6
      6.51e-18
                  3.13e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
                  2.45e-03
      2.60e-18
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
      3.47e-18
                  1.65e-02
                              8.05e-04
                                                       1.42e-03
 12
                                           0.00e+00
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                              6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
                  3.88e-02
 14
      0.00e+00
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                           0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
                                           0.00e+00
                  4.01e-03
                               3.06e-06
                                                       2.99e-05
 18
      0.00e+00
                                                                  1e+05
 19
      1.39e-17
                  5.68e-04
                               2.17e-07
                                           0.00e+00
                                                       2.12e-06
                                                                  3e+05
 20
      0.00e+00
                  4.17e-05
                              7.96e-09
                                           0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
      0.00e+00
                  1.56e-06
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                                           0.00e+00
                               1.41e-12
                                                       1.38e-11
                                                                  2e+06
iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
  1
      1.00e+00
                  1.00e+00
                               1.41e-12
                                           0.00e+00
                                                       0.00e+00
                                                                  1e+00
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                           0.00e+00
                                                       9.62e-07
                                                                  2e+00
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                           0.00e+00
                                                       2.89e-06
                                                                  4e+00
  4
                  7.84e-05
                              9.80e-04
                                                       6.73e-06
      8.40e-19
                                           0.00e+00
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                           0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                                       4.52e-04
                                           0.00e+00
                                                                  5e+02
 11
      6.94e-18
                  9.08e-03
                              8.87e-04
                                           0.00e+00
                                                       8.33e-04
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                           0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
      0.00e+00
                  2.74e-02
                               6.68e-04
                                           0.00e+00
                                                       2.09e-03
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
```

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15
      0.00e+00
                   4.27e-02
                               2.60e-04
                                           0.00e+00
                                                        1.88e-03
                                                                   2e+04
 16
      1.39e-17
                   3.23e-02
                               9.87e-05
                                           0.00e+00
                                                        8.71e-04
                                                                   3e+04
 17
      1.39e-17
                   1.51e-02
                               2.31e-05
                                           0.00e+00
                                                        2.21e-04
                                                                   7e+04
 18
      0.00e+00
                   4.01e-03
                               3.06e-06
                                           0.00e+00
                                                        2.99e-05
                                                                   1e+05
 19
      1.39e-17
                               2.17e-07
                                                        2.12e-06
                   5.68e-04
                                           0.00e+00
                                                                   3e+05
 20
      0.00e+00
                   4.17e-05
                               7.96e-09
                                                        7.81e-08
                                           0.00e+00
                                                                   5e+05
 21
      0.00e+00
                   1.56e-06
                               1.49e-10
                                           0.00e+00
                                                        1.46e-09
                                                                   1e+06
 22
      1.39e-17
                   2.95e-08
                               1.41e-12
                                           0.00e+00
                                                        1.38e-11
                                                                   2e+06
iter
        |\nabla L_{x}|
                    |\nabla AL_{\times}|
                                max(h)
                                             |c|
                                                         compl
                                                                    ρ
                   1.00e+00
                                                                   1e+00
  1
      1.00e+00
                               1.41e-12
                                           0.00e+00
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      6.31e-18
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                               9.81e-04
                                           0.00e+00
                                                        9.62e-07
                                                                   2e+00
  3
                   3.92e-05
                               9.81e-04
      5.06e-18
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                                                                   3e+02
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                                                                   8e+03
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                               2.60e-04
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      1.39e-17
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                               7.96e-09
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                               1.49e-10
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                                                        1.38e-11
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iter
        |\nabla L_{x}|
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 22
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iter
        |\nabla L_{\times}|
                    |\nabla AL_{\times}|
                                max(h)
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                                                       9.62e-07
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                                                                  4e+00
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                               1.41e-12
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iter
       |\nabla L_{x}|
                    |\nabla AL_{\times}|
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                              9.81e-04
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                                                       2.89e-06
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                                                       6.73e-06
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                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
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                                          0.00e+00
                                                       2.97e-05
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 15
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 16
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 18
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 22
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                                                        compl
iter
       |\nabla L_{\times}|
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                                max(h)
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                                                       1.44e-05
                                                                  2e+01
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                                                       2.97e-05
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 22
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       |\nabla L_{x}|
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                                          0.00e+00
                                                       7.81e-08
                                                                  5e+05
 21
                  1.56e-06
      0.00e+00
                              1.49e-10
                                           0.00e+00
                                                       1.46e-09
                                                                  1e+06
 22
      1.39e-17
                  2.95e-08
                              1.41e-12
                                           0.00e+00
                                                       1.38e-11
                                                                  2e+06
       |\nabla L_{\times}|
iter
                    |\nabla AL_{\times}|
                                max(h)
                                            |c|
                                                        compl
                                                                   ρ
                                          0.00e+00
                                                       0.00e+00
      1.00e+00
                  1.00e+00
                              1.41e-12
                                                                  1e+00
  1
  2
      6.31e-18
                  1.96e-05
                              9.81e-04
                                          0.00e+00
                                                       9.62e-07
                                                                  2e+00
                                                       2.89e-06
  3
      5.06e-18
                  3.92e-05
                              9.81e-04
                                          0.00e+00
                                                                  4e+00
  4
      8.40e-19
                  7.84e-05
                              9.80e-04
                                           0.00e+00
                                                       6.73e-06
                                                                  8e+00
  5
      1.71e-18
                  1.57e-04
                              9.80e-04
                                           0.00e+00
                                                       1.44e-05
                                                                  2e+01
  6
      6.51e-18
                  3.13e-04
                              9.78e-04
                                           0.00e+00
                                                       2.97e-05
                                                                  3e+01
  7
      9.76e-19
                  6.24e-04
                              9.75e-04
                                           0.00e+00
                                                       6.00e-05
                                                                  6e+01
  8
      5.42e-18
                  1.24e-03
                              9.69e-04
                                          0.00e+00
                                                       1.20e-04
                                                                  1e+02
  9
      2.60e-18
                  2.45e-03
                              9.56e-04
                                           0.00e+00
                                                       2.35e-04
                                                                  3e+02
 10
      6.94e-18
                  4.77e-03
                              9.33e-04
                                           0.00e+00
                                                       4.52e-04
                                                                  5e+02
      6.94e-18
                  9.08e-03
                              8.87e-04
                                                       8.33e-04
 11
                                           0.00e+00
                                                                  1e+03
 12
      3.47e-18
                  1.65e-02
                              8.05e-04
                                          0.00e+00
                                                       1.42e-03
                                                                  2e+03
 13
                  2.74e-02
                                                       2.09e-03
      0.00e+00
                              6.68e-04
                                          0.00e+00
                                                                  4e+03
 14
      0.00e+00
                  3.88e-02
                              4.74e-04
                                           0.00e+00
                                                       2.40e-03
                                                                  8e+03
 15
      0.00e+00
                  4.27e-02
                              2.60e-04
                                          0.00e+00
                                                       1.88e-03
                                                                  2e+04
 16
      1.39e-17
                  3.23e-02
                              9.87e-05
                                           0.00e+00
                                                       8.71e-04
                                                                  3e+04
 17
      1.39e-17
                  1.51e-02
                              2.31e-05
                                           0.00e+00
                                                       2.21e-04
                                                                  7e+04
```

```
18
      0.00e+00
                 4.01e-03
                            3.06e-06
                                       0.00e+00
                                                   2.99e-05
                                                             1e+05
 19
      1.39e-17
                 5.68e-04
                            2.17e-07
                                       0.00e+00
                                                   2.12e-06
                                                             3e+05
 20
      0.00e+00
                 4.17e-05
                                                             5e+05
                            7.96e-09
                                       0.00e+00
                                                   7.81e-08
 21
      0.00e+00
                 1.56e-06
                            1.49e-10
                                       0.00e+00
                                                   1.46e-09
                                                             1e+06
 22
      1.39e-17
                 2.95e-08
                            1.41e-12
                                       0.00e+00
                                                   1.38e-11
                                                             2e+06
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:28 =# @test
(abs(maximum(ys) - 2) < 0.1) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1 S24/Q3.ipynb:29 =# @test
(minimum(ys) > -0.01) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1 S24/Q3.ipynb:30 =# @test
(abs(xs[end] - 3) < 0.01) = Test Passed
```



#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:33 =# @test
(maximum(xdot) < 1.0001) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:34 =# @test
(minimum(xdot) > 0.9999) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:35 =# @test
(ys[110] > 0.01) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:36 =# @test
(abs(ys[111]) < 0.01) = Test Passed
#= /home/sman/Work/CMU/Courses/OCRL/OCRL2024/HW/HW1_S24/Q3.ipynb:37 =# @test
(abs(ys[112]) < 0.01) = Test Passed</pre>

 $_{\Gamma}$ Info: MeshCat server started. You can open the visualizer by visiting the following URL in your browser:

http://127.0.0.1:8703

^{- @} MeshCat /root/.julia/packages/MeshCat/vWPbP/src/visualizer.jl:73

Part D (5 pts): Solve a QP

Use your QP solver to solve the following optimization problem:

$$egin{array}{ll} \min_{y \in \mathbb{R}^2, a \in \mathbb{R}, b \in \mathbb{R}} & rac{1}{2} y^T \left[egin{array}{ccc} 1 & .3 \ .3 & 1 \end{array}
ight] y + a^2 + 2b^2 + \left[-2 & 3.4
ight] y + 2a + 4b \ & \mathrm{st} & a + b = 1 \ & \left[-1 & 2.3
ight] y + a - 2b = 3 \ & -0.5 \leq y \leq 1 \ & -1 \leq a \leq 1 \ & -1 \leq b \leq 1 \end{array}$$

You should be able to put this into our standard QP form that we used above, and solve.

```
In [7]: function rand_qp()
           qp = (
              Q = [ 1 0.3 0 0;
                  0.3 100;
                    0 0 2 0;
                     0 004],
              q = [-2, 3.4, 2, 4],
              A = [ 0 0 1 1;
                   -1 2.3 1 -2],
              b = [1, 3],
              G = [1 0 0 0;
                    0 1 0 0;
                   -1 0 0 0;
                    0 -1 0 0;
                    0 0 1 0;
                    0 0 -1 0;
                    0 0 0 1;
                   0 0 0 -1],
              h = [1, 1, 0.5, 0.5, 1, 1, 1, 1]
           )
           return qp
       end
```

rand_qp (generic function with 1 method)

```
In [8]: @testset "part D" begin

    x, λ, μ = solve_qp(rand_qp(); verbose = true, max_iters = 100, tol = 1e-6)
    y = x[1:2]
    a = x[3]
    b = x[4]

    @test norm(y - [-0.080823; 0.834424]) < 1e-3
    @test abs(a - 1) < 1e-3
    @test abs(b) < 1e-3
end</pre>
```

iter	$ \nabla L_{x} $	$ \nabla AL_{x} $	max(h)	c	compl	ρ
1	5.96e+00	9.91e+00	-5.00e-01	3.00e+00	0.00e+00	1e+00
2	2.77e-01	9.55e+00	2.77e-01	1.71e+00	7.69e-02	2e+00
3	6.01e-01	2.37e+00	3.01e-01	6.65e-01	1.74e-01	4e+00
4	7.19e-01	4.35e+00	3.12e-01	4.56e-01	5.78e-01	8e+00
5	3.64e-15	2.09e+00	1.94e-01	1.50e-01	6.61e-01	2e+01
6	4.97e-15	1.75e+00	7.82e-02	5.97e-02	3.64e-01	3e+01
7	3.80e-14	8.74e-01	1.96e-02	1.49e-02	1.03e-01	6e+01
8	2.74e-14	2.50e-01	2.80e-03	2.13e-03	1.53e-02	1e+02
9	4.66e-14	3.85e-02	2.15e-04	1.64e-04	1.18e-03	3e+02
10	1.05e-13	3.08e-03	8.62e-06	6.57e-06	4.74e-05	5e+02
11	3.44e-13	1.26e-04	1.76e-07	1.34e-07	9.67e-07	1e+03
12	1.03e-12	2.60e-06	1.82e-09	1.38e-09	9.98e-09	2e+03
13	2.27e-12	2.69e-08	9.42e-12	7.18e-12	5.18e-11	4e+03
Test	Summary:	Pass Total	L			
part	D	3 3	3			

Test.DefaultTestSet("part D", Any[], 3, false, false)

Part E (5 pts): One sentence short answer

1. For our Augmented Lagrangian solver, if our initial guess for x is feasible (meaning it satisfies the constraints), will it stay feasible through each iteration?

No, the augmented lagrangian penalizes violation rather than increase cost infinitely near violation

1. Does the Augmented Lagrangian function for this problem always have continuous first derivatives?

Yes, the $max(0,c(x))^2$ term of the AL has continuous derivative, since the Lagrangian also has a continuous derivative, then AL overall is continuous

1. Is the QP in part D always convex?

Yes, the hessian is PD

```
In [10]: # check if part D QP is always convex:
    eigvals(rand_qp().Q)
            4-element Vector{Float64}:
             0.7
```

1.3

2.0 4.0