```
>> demo_Polynomial_Dictionary_Learning
Starting to train the dictionary
solving the quadratic problem with YALMIP...

 num. of constraints = 85
 dim. of socp   var  = 86,    num. of socp blk  =  1
 dim. of linear var  = 800
********************************************************************
   SDPT3: Infeasible path-following algorithms
********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM       1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap       prim-obj       dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|9.9e-01|9.3e+01|1.1e+07| 2.215846e+04  0.000000e+00| 0:0:00| chol  1✔
1
 1|1.000|0.991|2.1e-06|9.4e-01|1.4e+05| 2.242954e+04 -2.288555e+02| 0:0:00| chol  1✔
1
 2|1.000|0.785|4.5e-06|2.3e-01|4.1e+04| 1.845160e+04 -1.518515e+02| 0:0:00| chol  1✔
1
 3|0.614|0.912|2.3e-06|2.9e-02|1.8e+04| 1.565764e+04 -1.840613e+02| 0:0:00| chol  1✔
1
 4|0.997|1.000|1.9e-07|3.0e-03|7.3e+02| 5.346921e+02 -1.816894e+02| 0:0:00| chol  1✔
1
 5|0.455|0.433|1.4e-07|1.8e-03|6.4e+02| 4.923328e+02 -1.384192e+02| 0:0:00| chol  1✔
1
 6|0.959|0.763|2.7e-08|4.6e-04|4.7e+02| 3.651938e+02 -1.024460e+02| 0:0:00| chol  1✔
1
 7|1.000|1.000|2.3e-09|3.0e-06|3.2e+02| 2.357142e+02 -8.418690e+01| 0:0:00| chol  1✔
1
 8|0.827|1.000|4.9e-10|3.0e-07|1.5e+02| 7.636818e+01 -7.860865e+01| 0:0:00| chol  1✔
1
 9|1.000|1.000|6.3e-11|3.0e-08|6.6e+01| 4.028326e+00 -6.147454e+01| 0:0:00| chol  1✔
1
10|1.000|1.000|3.9e-12|3.0e-09|3.0e+01|-2.882104e+01 -5.833790e+01| 0:0:00| chol  1✔
1
11|1.000|1.000|4.4e-14|3.0e-10|1.1e+01|-4.254981e+01 -5.367739e+01| 0:0:00| chol  1✔
1
12|1.000|1.000|2.8e-14|3.1e-11|4.0e+00|-4.862558e+01 -5.265256e+01| 0:0:00| chol  1✔
1
13|1.000|1.000|2.3e-14|4.0e-12|1.6e+00|-5.032133e+01 -5.188183e+01| 0:0:00| chol  1✔
1
14|1.000|1.000|1.0e-13|1.3e-12|5.1e-01|-5.118676e+01 -5.170072e+01| 0:0:00| chol  1✔
1
15|1.000|1.000|6.3e-14|1.0e-12|2.0e-01|-5.139932e+01 -5.159902e+01| 0:0:01| chol  1✔
1
16|1.000|1.000|7.4e-14|1.0e-12|5.8e-02|-5.151404e+01 -5.157249e+01| 0:0:01| chol  1✔
1
17|1.000|1.000|1.1e-11|1.0e-12|2.3e-02|-5.153837e+01 -5.156168e+01| 0:0:01| chol  1✔
1
18|0.983|0.994|8.6e-13|1.5e-12|5.7e-03|-5.155259e+01 -5.155829e+01| 0:0:01| chol  2✔
2
19|1.000|1.000|3.9e-13|1.0e-12|2.4e-03|-5.155520e+01 -5.155757e+01| 0:0:01| chol  1✔
1
```

```
20|0.839|0.806|5.1e-12|1.2e-12|6.9e-04|-5.155660e+01 -5.155729e+01| 0:0:01| chol  2↙
2
21|0.755|1.000|1.6e-12|1.0e-12|2.9e-04|-5.155693e+01 -5.155723e+01| 0:0:01| chol  2↙
2
22|0.959|0.985|1.4e-12|1.0e-12|6.9e-05|-5.155714e+01 -5.155721e+01| 0:0:01| chol  2↙
2
23|1.000|1.000|8.4e-12|1.0e-12|2.7e-05|-5.155718e+01 -5.155721e+01| 0:0:01| chol  2↙
2
24|0.913|0.996|7.7e-12|1.5e-12|7.1e-06|-5.155720e+01 -5.155721e+01| 0:0:01|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 24
 primal objective value = -5.15571997e+01
 dual   objective value = -5.15572068e+01
 gap := trace(XZ)       = 7.13e-06
 relative gap           = 6.85e-08
 actual relative gap    = 6.85e-08
 rel. primal infeas     = 7.66e-12
 rel. dual   infeas     = 1.50e-12
 norm(X), norm(y), norm(Z) = 1.1e+00, 5.2e+01, 2.0e+01
 norm(A), norm(b), norm(C) = 1.8e+03, 5.4e+01, 7.7e+01
 Total CPU time (secs)  = 0.58
 CPU time per iteration = 0.02
 termination code       =  0
 DIMACS errors: 1.4e-11  0.0e+00  2.2e-12  0.0e+00  6.8e-08  6.8e-08
-------------------------------------------------------------------

ans =

   51.5572


 num. of constraints = 85
 dim. of socp  var = 86,   num. of socp blk =  1
 dim. of linear var  = 800
********************************************************************
   SDPT3: Infeasible path-following algorithms
********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|6.9e+02|3.8e+09| 7.611963e+06  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.985|1.4e-07|1.0e+01|7.1e+07| 7.560148e+06 -9.793956e+03| 0:0:00| chol  2↙
2
 2|1.000|0.779|9.1e-09|2.3e+00|2.5e+07| 7.519139e+06 -1.221582e+04| 0:0:00| chol  2↙
2
 3|0.300|0.540|7.6e-09|1.1e+00|1.6e+07| 7.376493e+06 -3.079417e+04| 0:0:00| chol  2↙
2
 4|0.251|0.436|5.7e-09|6.0e-01|1.3e+07| 7.212429e+06 -5.742988e+04| 0:0:00| chol  2↙
2
 5|0.218|0.398|6.1e-09|3.6e-01|1.0e+07| 6.963752e+06 -9.094802e+04| 0:0:00| chol  2↙
2
```

```
 6|0.184|0.432|5.3e-09|2.1e-01|8.8e+06| 6.649621e+06 -1.361083e+05| 0:0:00| chol 2↙
2
 7|0.239|0.409|3.8e-09|1.2e-01|7.5e+06| 6.145327e+06 -1.829145e+05| 0:0:00| chol 2↙
2
 8|0.206|0.534|3.0e-09|5.7e-02|6.5e+06| 5.667377e+06 -2.308153e+05| 0:0:00| chol 2↙
2
 9|0.395|0.369|2.7e-09|3.6e-02|5.4e+06| 4.721737e+06 -2.567202e+05| 0:0:00| chol 2↙
2
10|0.241|0.764|3.3e-09|8.6e-03|4.6e+06| 4.262312e+06 -2.460355e+05| 0:0:00| chol 3↙
2
11|0.607|0.386|2.9e-09|5.3e-03|3.7e+06| 3.317913e+06 -2.570579e+05| 0:0:00| chol 3↙
3
12|0.503|1.000|1.7e-08|9.0e-05|3.1e+06| 2.870366e+06 -2.636131e+05| 0:0:00| chol 2↙
3
13|1.000|1.000|8.7e-09|4.5e-05|2.4e+06| 2.100380e+06 -2.584158e+05| 0:0:00| chol 2↙
2
14|1.000|1.000|1.1e-08|2.3e-05|9.4e+05| 8.128422e+05 -1.316252e+05| 0:0:00| chol 2↙
2
15|1.000|1.000|4.8e-09|1.1e-05|3.8e+05| 3.171425e+05 -6.279183e+04| 0:0:00| chol 2↙
2
16|1.000|1.000|6.5e-09|5.6e-06|1.6e+05| 1.283984e+05 -2.780244e+04| 0:0:00| chol 2↙
2
17|1.000|1.000|4.8e-10|2.8e-06|5.8e+04| 4.598027e+04 -1.208933e+04| 0:0:00| chol 2↙
2
18|1.000|1.000|3.3e-10|1.4e-06|2.3e+04| 1.835384e+04 -4.494001e+03| 0:0:00| chol 2↙
2
19|1.000|1.000|4.4e-11|7.0e-07|8.0e+03| 6.164520e+03 -1.836523e+03| 0:0:00| chol 2↙
2
20|1.000|1.000|1.2e-11|7.0e-08|3.0e+03| 2.440067e+03 -5.919336e+02| 0:0:00| chol 2↙
2
21|1.000|1.000|6.6e-12|7.0e-09|9.6e+02| 7.427310e+02 -2.221565e+02| 0:0:00| chol 2↙
2
22|1.000|1.000|4.0e-12|7.1e-10|3.8e+02| 3.055921e+02 -7.233001e+01| 0:0:00| chol 2↙
2
23|1.000|1.000|4.8e-12|7.1e-11|1.0e+02| 6.930154e+01 -3.087453e+01| 0:0:00| chol 2↙
2
24|1.000|1.000|1.6e-12|8.0e-12|4.3e+01| 2.462371e+01 -1.816723e+01| 0:0:00| chol 2↙
2
25|0.949|1.000|2.3e-12|1.7e-12|8.8e+00|-5.439100e+00 -1.420642e+01| 0:0:00| chol 2↙
2
26|1.000|1.000|1.6e-11|1.1e-12|3.7e+00|-9.996662e+00 -1.370710e+01| 0:0:00| chol 2↙
2
27|0.968|1.000|1.5e-11|1.5e-12|6.7e-01|-1.284155e+01 -1.351297e+01| 0:0:00| chol 3↙
3
28|1.000|1.000|1.7e-11|2.3e-12|2.4e-01|-1.325880e+01 -1.349664e+01| 0:0:00| chol 4↙
4
29|0.971|0.835|7.1e-12|3.7e-12|2.6e-02|-1.346613e+01 -1.349238e+01| 0:0:00| chol 6↙
6
30|1.000|0.973|5.3e-11|1.5e-12|4.3e-03|-1.348728e+01 -1.349158e+01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30    1
31|0.982|0.979|4.8e-11|2.2e-12|7.9e-05|-1.349146e+01 -1.349154e+01| 0:0:00| lu 30↙
^20
32|0.984|0.864|4.8e-10|3.5e-12|2.9e-06|-1.349153e+01 -1.349153e+01| 0:0:00| lu 30↙
```

```
30
33|0.442|0.490|6.1e-09|6.5e-12|1.9e-06|-1.349151e+01 -1.349153e+01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 33
 primal objective value = -1.34915059e+01
 dual   objective value = -1.34915341e+01
 gap := trace(XZ)       = 1.87e-06
 relative gap           = 6.67e-08
 actual relative gap    = 1.01e-06
 rel. primal infeas     = 6.14e-09
 rel. dual   infeas     = 6.54e-12
 norm(X), norm(y), norm(Z) = 2.8e+01, 9.0e+01, 5.9e+01
 norm(A), norm(b), norm(C) = 1.3e+05, 2.1e+05, 7.7e+01
 Total CPU time (secs)  = 0.40
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.4e-08  0.0e+00  9.4e-12  0.0e+00  1.0e-06  6.7e-08
-------------------------------------------------------------------


ans =

   13.4915


Iteration   2   Total error is: 0.014991

 num. of constraints = 85
 dim. of socp   var = 86,   num. of socp blk  =  1
 dim. of linear var = 800
**********************************************************************
   SDPT3: Infeasible path-following algorithms
**********************************************************************
 version  predcorr  gam  expon   scale_data
   HKM       1      0.000   1         0
it pstep dstep pinfeas dinfeas  gap       prim-obj      dual-obj     cputime
-------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|9.0e+02|4.9e+09| 9.672691e+06  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.986|7.6e-08|1.3e+01|8.7e+07| 9.606654e+06 -1.484423e+04| 0:0:00| chol  2↙
2
 2|1.000|0.780|3.8e-09|2.8e+00|2.9e+07| 9.036431e+06 -1.255494e+04| 0:0:00| chol  2↙
2
 3|0.286|0.557|3.6e-09|1.2e+00|1.9e+07| 8.808688e+06 -3.417581e+04| 0:0:00| chol  2↙
2
 4|0.265|0.431|2.8e-09|7.0e-01|1.5e+07| 8.542217e+06 -6.361453e+04| 0:0:00| chol  2↙
2
 5|0.211|0.408|3.1e-09|4.2e-01|1.2e+07| 8.235059e+06 -1.022167e+05| 0:0:00| chol  2↙
2
 6|0.200|0.417|2.9e-09|2.4e-01|1.0e+07| 7.822458e+06 -1.505593e+05| 0:0:00| chol  2↙
2
 7|0.215|0.432|2.7e-09|1.4e-01|8.8e+06| 7.280011e+06 -2.046626e+05| 0:0:00| chol  2↙
2
 8|0.236|0.457|2.4e-09|7.5e-02|7.7e+06| 6.630815e+06 -2.562503e+05| 0:0:00| chol  2↙
2
```

```
 9|0.276|0.468|2.2e-09|4.0e-02|6.6e+06| 5.868307e+06 -2.937704e+05| 0:0:00| chol  2↙
2
10|0.302|0.517|2.7e-09|2.0e-02|5.7e+06| 5.091615e+06 -3.083769e+05| 0:0:00| chol  2↙
2
11|0.382|0.518|2.5e-09|9.4e-03|4.7e+06| 4.262147e+06 -3.058673e+05| 0:0:00| chol  3↙
2
12|0.421|1.000|2.1e-08|9.0e-05|4.0e+06| 3.747048e+06 -2.908636e+05| 0:0:00| chol  2↙
3
13|1.000|1.000|4.4e-08|4.5e-05|3.2e+06| 2.818917e+06 -3.581941e+05| 0:0:00| chol  2↙
2
14|1.000|1.000|1.1e-08|2.3e-05|1.9e+06| 1.690624e+06 -2.459983e+05| 0:0:00| chol  2↙
2
15|1.000|1.000|5.6e-09|1.1e-05|7.9e+05| 6.465752e+05 -1.407499e+05| 0:0:00| chol  2↙
2
16|1.000|0.993|8.1e-09|5.7e-06|2.5e+05| 2.045928e+05 -4.388031e+04| 0:0:00| chol  2↙
2
17|1.000|1.000|8.1e-10|2.8e-06|1.3e+05| 1.063235e+05 -2.828370e+04| 0:0:00| chol  2↙
2
18|1.000|1.000|5.8e-10|1.4e-06|4.2e+04| 3.379012e+04 -8.317944e+03| 0:0:00| chol  2↙
2
19|1.000|1.000|7.3e-11|7.0e-07|1.7e+04| 1.310470e+04 -4.048374e+03| 0:0:00| chol  1↙
2
20|1.000|1.000|4.5e-12|7.0e-08|6.0e+03| 4.802125e+03 -1.155567e+03| 0:0:00| chol  1↙
2
21|1.000|1.000|2.4e-12|7.0e-09|2.1e+03| 1.604861e+03 -4.905966e+02| 0:0:00| chol  2↙
2
22|1.000|1.000|2.2e-12|7.1e-10|7.9e+02| 6.550878e+02 -1.361313e+02| 0:0:00| chol  1↙
1
23|1.000|1.000|6.7e-11|7.1e-11|2.3e+02| 1.753722e+02 -5.127278e+01| 0:0:00| chol  2↙
2
24|1.000|1.000|4.3e-13|8.5e-12|9.4e+01| 7.503457e+01 -1.936618e+01| 0:0:00| chol  1↙
2
25|0.955|1.000|3.0e-13|1.7e-12|2.0e+01| 9.372457e+00 -1.056829e+01| 0:0:00| chol  2↙
2
26|1.000|1.000|2.2e-12|1.1e-12|8.3e+00|-8.948342e-01 -9.212057e+00| 0:0:00| chol  2↙
2
27|0.947|0.991|4.9e-12|1.0e-12|1.3e+00|-7.426220e+00 -8.764634e+00| 0:0:00| chol  3↙
3
28|1.000|1.000|2.9e-11|1.0e-12|3.9e-01|-8.343183e+00 -8.732697e+00| 0:0:00| chol  4↙
4
29|1.000|1.000|4.1e-11|1.5e-12|9.6e-02|-8.629828e+00 -8.725931e+00| 0:0:00| chol  7↙
7
30|0.957|0.870|3.0e-11|2.4e-12|6.0e-03|-8.719137e+00 -8.725150e+00| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30    1
31|0.968|0.970|3.5e-11|3.4e-12|2.5e-04|-8.724800e+00 -8.725050e+00| 0:0:00| lu 11↙
30
32|0.940|0.935|5.2e-09|5.3e-12|1.8e-05|-8.725028e+00 -8.725047e+00| 0:0:00| lu 11↙
^20
33|0.836|0.889|9.1e-09|8.2e-12|5.6e-06|-8.725040e+00 -8.725047e+00| 0:0:00| lu 18↙
30
34|0.791|1.000|6.8e-09|1.1e-11|3.3e-06|-8.725069e+00 -8.725047e+00| 0:0:00| lu 11↙
30
35|0.408|0.488|1.2e-08|2.3e-11|2.1e-06|-8.725056e+00 -8.725047e+00| 0:0:00| lu 11↙
```

```
^11
36|1.000|1.000|2.6e-08|2.6e-11|1.4e-06|-8.725028e+00 -8.725047e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 36
 primal objective value = -8.72502821e+00
 dual   objective value = -8.72504722e+00
 gap := trace(XZ)       = 1.39e-06
 relative gap           = 7.56e-08
 actual relative gap    = 1.03e-06
 rel. primal infeas     = 2.55e-08
 rel. dual   infeas     = 2.56e-11
 norm(X), norm(y), norm(Z) = 3.1e+01, 9.4e+01, 6.5e+01
 norm(A), norm(b), norm(C) = 1.6e+05, 3.2e+05, 7.7e+01
 Total CPU time (secs)  = 0.42
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 5.1e-08  0.0e+00  3.7e-11  0.0e+00  1.0e-06  7.6e-08
-------------------------------------------------------------------


ans =

    8.7250


Iteration   3   Total error is: 0.012049

 num. of constraints = 85
 dim. of socp   var = 86,   num. of socp blk  =  1
 dim. of linear var = 800
*********************************************************************
   SDPT3: Infeasible path-following algorithms
*********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM       1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap       prim-obj       dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|9.7e+02|5.4e+09| 1.071788e+07  0.000000e+00| 0:0:00| chol  1✓
1
 1|1.000|0.987|6.0e-08|1.3e+01|9.3e+07| 1.064496e+07 -1.732534e+04| 0:0:00| chol  2✓
2
 2|1.000|0.785|2.7e-09|2.8e+00|3.0e+07| 9.704878e+06 -1.145620e+04| 0:0:00| chol  2✓
2
 3|0.285|0.550|2.8e-09|1.3e+00|2.0e+07| 9.384972e+06 -3.214283e+04| 0:0:00| chol  2✓
2
 4|0.251|0.446|2.3e-09|7.1e-01|1.5e+07| 9.099609e+06 -6.293442e+04| 0:0:00| chol  2✓
2
 5|0.229|0.389|2.5e-09|4.3e-01|1.3e+07| 8.730421e+06 -9.997837e+04| 0:0:00| chol  2✓
2
 6|0.172|0.438|2.6e-09|2.4e-01|1.1e+07| 8.352227e+06 -1.529068e+05| 0:0:00| chol  2✓
2
 7|0.248|0.379|2.5e-09|1.5e-01|9.4e+06| 7.700150e+06 -2.057743e+05| 0:0:00| chol  2✓
2
 8|0.163|0.531|2.4e-09|7.2e-02|8.3e+06| 7.230458e+06 -2.730990e+05| 0:0:00| chol  2✓
2
```

```
 9|0.380|0.318|2.3e-09|4.9e-02|7.1e+06| 6.157704e+06 -3.166374e+05| 0:0:00| chol  2↙
2
10|0.145|0.799|1.5e-09|9.9e-03|6.3e+06| 5.815774e+06 -3.547829e+05| 0:0:00| chol  2↙
2
11|0.562|0.285|3.0e-09|7.1e-03|5.1e+06| 4.622213e+06 -3.742788e+05| 0:0:00| chol  3↙
3
12|0.363|1.000|5.8e-08|9.0e-05|4.5e+06| 4.170171e+06 -2.882827e+05| 0:0:00| chol  2↙
2
13|1.000|1.000|8.7e-08|4.5e-05|3.1e+06| 2.705829e+06 -4.093622e+05| 0:0:00| chol  2↙
2
14|1.000|1.000|2.0e-09|2.3e-05|1.5e+06| 1.345557e+06 -1.935064e+05| 0:0:00| chol  1↙
2
15|0.875|1.000|1.3e-08|1.1e-05|6.0e+05| 4.765468e+05 -1.239950e+05| 0:0:00| chol  2↙
2
16|1.000|1.000|2.6e-09|5.6e-06|2.7e+05| 2.215180e+05 -4.471022e+04| 0:0:00| chol  2↙
2
17|1.000|1.000|6.4e-10|2.8e-06|9.9e+04| 7.460472e+04 -2.391555e+04| 0:0:00| chol  1↙
1
18|1.000|1.000|3.4e-10|1.4e-06|3.8e+04| 3.093911e+04 -7.332866e+03| 0:0:00| chol  2↙
2
19|1.000|1.000|8.5e-12|7.0e-07|1.3e+04| 9.719099e+03 -3.355573e+03| 0:0:00| chol  1↙
1
20|1.000|1.000|5.8e-11|7.0e-08|5.1e+03| 4.165093e+03 -9.452950e+02| 0:0:00| chol  1↙
1
21|1.000|1.000|1.4e-11|7.0e-09|1.6e+03| 1.205640e+03 -3.776864e+02| 0:0:00| chol  1↙
1
22|1.000|1.000|2.5e-11|7.1e-10|6.5e+02| 5.488389e+02 -1.025651e+02| 0:0:00| chol  2↙
2
23|0.991|1.000|6.8e-13|7.5e-11|1.7e+02| 1.354907e+02 -3.415460e+01| 0:0:00| chol  1↙
2
24|1.000|1.000|3.7e-13|8.0e-12|7.4e+01| 6.158805e+01 -1.286696e+01| 0:0:00| chol  2↙
2
25|0.946|1.000|1.3e-12|1.7e-12|1.4e+01| 7.495569e+00 -6.104987e+00| 0:0:00| chol  2↙
2
26|1.000|1.000|1.6e-11|1.1e-12|5.3e+00|-1.790367e-01 -5.523433e+00| 0:0:00| chol  3↙
3
27|1.000|1.000|7.5e-12|1.5e-12|9.4e-01|-4.354809e+00 -5.291743e+00| 0:0:00| chol  4↙
4
28|1.000|1.000|2.8e-11|1.5e-12|1.9e-01|-5.083606e+00 -5.272853e+00| 0:0:00| chol  8↙
8
29|1.000|1.000|5.3e-11|2.2e-12|4.4e-02|-5.227035e+00 -5.270788e+00| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30 ^17
30|0.922|0.975|2.5e-09|3.4e-12|5.6e-03|-5.265026e+00 -5.270602e+00| 0:0:00| lu 30↙
30
31|0.652|0.614|5.6e-09|6.4e-12|2.0e-03|-5.268604e+00 -5.270594e+00| 0:0:00| lu 12↙
30
32|0.238|0.525|1.1e-08|1.1e-11|1.6e-03|-5.269112e+00 -5.270593e+00| 0:0:00| lu 30↙
^29
33|0.027|0.088|4.0e-08|2.1e-11|1.5e-03|-5.269128e+00 -5.270593e+00| 0:0:00| lu 30↙
^15
34|0.096|0.404|4.7e-08|3.0e-11|1.5e-03|-5.269181e+00 -5.270593e+00| 0:0:00|
  stop: progress is too slow
  stop: progress is bad
```

```
  stop: progress is bad*
 -------------------------------------------------------------------
 number of iterations   = 34
 primal objective value = -5.26911190e+00
 dual   objective value = -5.27059301e+00
 gap := trace(XZ)       = 1.55e-03
 relative gap           = 1.34e-04
 actual relative gap    = 1.28e-04
 rel. primal infeas     = 1.07e-08
 rel. dual   infeas     = 1.06e-11
 norm(X), norm(y), norm(Z) = 3.3e+01, 9.8e+01, 7.0e+01
 norm(A), norm(b), norm(C) = 1.7e+05, 3.7e+05, 7.7e+01
 Total CPU time (secs) = 0.39
 CPU time per iteration = 0.01
 termination code       = -5
 DIMACS errors: 2.1e-08  0.0e+00  1.5e-11  0.0e+00  1.3e-04  1.3e-04
 -------------------------------------------------------------------


ans =

    5.2706


Iteration   4   Total error is: 0.0093678

 num. of constraints = 85
 dim. of socp   var  = 86,   num. of socp blk  =  1
 dim. of linear var  = 800
 *********************************************************************
    SDPT3: Infeasible path-following algorithms
 *********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM       1      0.000   1        0
 it pstep dstep pinfeas dinfeas  gap       prim-obj        dual-obj    cputime
 -------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|1.1e+03|6.1e+09| 1.197581e+07  0.000000e+00| 0:0:00| chol  1↙
 1
 1|1.000|0.987|5.2e-08|1.4e+01|1.0e+08| 1.189377e+07 -2.062735e+04| 0:0:00| chol  2↙
 2
 2|1.000|0.789|2.2e-09|3.0e+00|3.1e+07| 1.048304e+07 -1.111794e+04| 0:0:00| chol  2↙
 2
 3|0.284|0.552|2.1e-09|1.3e+00|2.1e+07| 1.007311e+07 -3.213274e+04| 0:0:00| chol  2↙
 2
 4|0.250|0.451|1.8e-09|7.4e-01|1.6e+07| 9.742135e+06 -6.409629e+04| 0:0:00| chol  2↙
 2
 5|0.236|0.386|1.9e-09|4.6e-01|1.3e+07| 9.319304e+06 -1.015732e+05| 0:0:00| chol  2↙
 2
 6|0.167|0.445|2.2e-09|2.5e-01|1.1e+07| 8.923482e+06 -1.568250e+05| 0:0:00| chol  2↙
 2
 7|0.260|0.369|2.0e-09|1.6e-01|9.9e+06| 8.195838e+06 -2.097925e+05| 0:0:00| chol  2↙
 2
 8|0.152|0.552|1.9e-09|7.2e-02|8.8e+06| 7.731157e+06 -2.797794e+05| 0:0:00| chol  2↙
 2
 9|0.400|0.297|1.6e-09|5.1e-02|7.5e+06| 6.558615e+06 -3.226988e+05| 0:0:00| chol  2↙
 2
```

```
10|0.123|0.838|1.9e-09|8.2e-03|6.7e+06| 6.244550e+06 -3.593711e+05| 0:0:00| chol  2↙
2
11|0.526|0.284|4.7e-09|5.9e-03|5.6e+06| 5.097489e+06 -3.841819e+05| 0:0:00| chol  3↙
3
12|0.326|1.000|3.1e-08|9.0e-05|5.0e+06| 4.688787e+06 -2.791091e+05| 0:0:00| chol  2↙
2
13|1.000|1.000|4.5e-08|4.5e-05|3.3e+06| 2.838630e+06 -4.765785e+05| 0:0:00| chol  2↙
2
14|1.000|1.000|4.7e-08|2.3e-05|2.0e+06| 1.810183e+06 -1.829741e+05| 0:0:00| chol  2↙
2
15|0.835|1.000|4.6e-09|1.1e-05|6.4e+05| 5.032417e+05 -1.352900e+05| 0:0:00| chol  2↙
2
16|1.000|1.000|3.0e-09|5.6e-06|2.6e+05| 2.173744e+05 -4.194911e+04| 0:0:00| chol  2↙
2
17|0.966|1.000|7.5e-10|2.8e-06|8.6e+04| 6.329800e+04 -2.236547e+04| 0:0:00| chol  2↙
2
18|1.000|1.000|1.0e-10|1.4e-06|3.7e+04| 2.968170e+04 -7.116167e+03| 0:0:00| chol  1↙
2
19|1.000|1.000|2.2e-11|7.0e-07|1.2e+04| 8.947765e+03 -2.971460e+03| 0:0:00| chol  1↙
2
20|1.000|1.000|3.3e-12|7.0e-08|4.7e+03| 3.835286e+03 -8.770475e+02| 0:0:00| chol  1↙
2
21|1.000|1.000|2.5e-12|7.0e-09|1.4e+03| 1.110075e+03 -3.358284e+02| 0:0:00| chol  2↙
2
22|1.000|1.000|7.7e-13|7.1e-10|5.9e+02| 5.017228e+02 -9.108992e+01| 0:0:00| chol  1↙
2
23|0.991|1.000|8.2e-13|7.1e-11|1.5e+02| 1.250129e+02 -2.843321e+01| 0:0:00| chol  2↙
2
24|1.000|1.000|1.1e-12|8.0e-12|6.7e+01| 5.790041e+01 -9.282394e+00| 0:0:00| chol  2↙
2
25|0.945|1.000|3.6e-13|1.7e-12|1.3e+01| 9.492828e+00 -3.118345e+00| 0:0:00| chol  2↙
2
26|1.000|1.000|1.4e-11|1.1e-12|5.1e+00| 2.548519e+00 -2.569139e+00| 0:0:00| chol  3↙
3
27|1.000|1.000|1.3e-11|1.5e-12|9.3e-01|-1.406365e+00 -2.333254e+00| 0:0:00| chol  4↙
5
28|1.000|1.000|6.8e-11|2.3e-12|1.9e-01|-2.123106e+00 -2.311869e+00| 0:0:00| chol  7↙
8
29|1.000|1.000|1.5e-10|3.4e-12|3.9e-02|-2.270111e+00 -2.309404e+00| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30 ^21
30|0.573|0.665|8.3e-09|6.2e-12|2.4e-02|-2.284542e+00 -2.309309e+00| 0:0:00| lu 13↙
30
31|0.154|0.168|6.5e-08|1.3e-11|2.2e-02|-2.286716e+00 -2.309309e+00| 0:0:00| lu 22↙
30
32|0.149|0.524|6.2e-08|1.7e-11|2.1e-02|-2.287893e+00 -2.309320e+00| 0:0:00|
  stop: progress is bad
-------------------------------------------------------------------
 number of iterations   = 32
 primal objective value = -2.28454219e+00
 dual   objective value = -2.30930903e+00
 gap := trace(XZ)       = 2.42e-02
 relative gap           = 4.33e-03
 actual relative gap    = 4.43e-03
```

```
 rel. primal infeas    = 8.26e-09
 rel. dual   infeas    = 6.19e-12
 norm(X), norm(y), norm(Z) = 3.6e+01, 1.0e+02, 7.4e+01
 norm(A), norm(b), norm(C) = 1.8e+05, 4.2e+05, 7.7e+01
 Total CPU time (secs) = 0.36
 CPU time per iteration = 0.01
 termination code      = -5
 DIMACS errors: 1.6e-08  0.0e+00  8.9e-12  0.0e+00  4.4e-03  4.3e-03
-----------------------------------------------------------------
```

ans =

    2.3093

Iteration   5   Total error is: 0.0062007

```
 num. of constraints = 85
 dim. of socp  var  = 86,   num. of socp blk  =  1
 dim. of linear var  = 800
*********************************************************************
   SDPT3: Infeasible path-following algorithms
*********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj     cputime
-----------------------------------------------------------------
 0|0.000|0.000|1.0e+00|1.1e+03|6.3e+09| 1.251859e+07  0.000000e+00| 0:0:00| chol 1↙
1
 1|1.000|0.987|4.6e-08|1.5e+01|1.1e+08| 1.243240e+07 -2.291988e+04| 0:0:00| chol 2↙
2
 2|1.000|0.792|2.0e-09|3.1e+00|3.2e+07| 1.069589e+07 -1.072276e+04| 0:0:00| chol 2↙
2
 3|0.281|0.554|2.1e-09|1.4e+00|2.1e+07| 1.024568e+07 -3.180993e+04| 0:0:00| chol 1↙
2
 4|0.252|0.451|1.7e-09|7.5e-01|1.6e+07| 9.887222e+06 -6.365088e+04| 0:0:00| chol 2↙
2
 5|0.236|0.386|1.8e-09|4.6e-01|1.3e+07| 9.450052e+06 -1.011417e+05| 0:0:00| chol 2↙
2
 6|0.167|0.443|2.0e-09|2.6e-01|1.2e+07| 9.045519e+06 -1.564301e+05| 0:0:00| chol 2↙
2
 7|0.258|0.370|1.8e-09|1.6e-01|1.0e+07| 8.314183e+06 -2.099344e+05| 0:0:00| chol 2↙
2
 8|0.153|0.547|1.8e-09|7.4e-02|8.9e+06| 7.839159e+06 -2.806940e+05| 0:0:00| chol 2↙
2
 9|0.395|0.300|2.5e-09|5.2e-02|7.6e+06| 6.662241e+06 -3.245910e+05| 0:0:00| chol 2↙
2
10|0.124|0.824|1.7e-09|9.2e-03|6.8e+06| 6.341176e+06 -3.645737e+05| 0:0:00| chol 2↙
2
11|0.525|0.277|9.3e-09|6.7e-03|5.7e+06| 5.178078e+06 -3.893145e+05| 0:0:00| chol 2↙
3
12|0.344|1.000|4.1e-08|9.0e-05|5.0e+06| 4.713563e+06 -2.993528e+05| 0:0:00| chol 2↙
2
13|1.000|1.000|9.3e-08|4.5e-05|3.4e+06| 2.916904e+06 -4.440283e+05| 0:0:00| chol 2↙
2
```

14|1.000|1.000|2.9e-08|2.3e-05|1.7e+06| 1.526058e+06 -2.024942e+05| 0:0:00| chol 2✓
2
15|0.847|1.000|7.6e-10|1.1e-05|6.6e+05| 5.257685e+05 -1.353220e+05| 0:0:00| chol 2✓
2
16|1.000|1.000|7.7e-10|5.6e-06|2.9e+05| 2.402116e+05 -4.696908e+04| 0:0:00| chol 2✓
2
17|1.000|1.000|6.1e-10|2.8e-06|1.0e+05| 7.709516e+04 -2.624061e+04| 0:0:00| chol 2✓
2
18|1.000|1.000|2.1e-10|1.4e-06|4.2e+04| 3.389868e+04 -7.919658e+03| 0:0:00| chol 2✓
2
19|1.000|1.000|2.8e-11|7.0e-07|1.4e+04| 1.050374e+04 -3.672687e+03| 0:0:00| chol 2✓
2
20|1.000|1.000|8.7e-12|7.0e-08|5.6e+03| 4.535646e+03 -1.033441e+03| 0:0:00| chol 1✓
1
21|1.000|1.000|5.3e-11|7.0e-09|1.7e+03| 1.312454e+03 -4.141028e+02| 0:0:00| chol 1✓
2
22|1.000|1.000|1.0e-12|7.1e-10|7.1e+02| 5.997436e+02 -1.104705e+02| 0:0:00| chol 1✓
2
23|0.992|1.000|1.3e-12|7.1e-11|1.9e+02| 1.526644e+02 -3.425794e+01| 0:0:00| chol 2✓
2
24|1.000|1.000|3.5e-13|8.0e-12|8.2e+01| 7.228660e+01 -9.741619e+00| 0:0:00| chol 2✓
2
25|0.949|1.000|7.2e-13|1.7e-12|1.6e+01| 1.416932e+01 -1.932928e+00| 0:0:00| chol 2✓
2
26|1.000|1.000|3.9e-12|1.1e-12|6.7e+00| 5.550621e+00 -1.100619e+00| 0:0:00| chol 2✓
2
27|0.977|1.000|3.0e-11|1.0e-12|1.1e+00| 3.393323e-01 -7.667852e-01| 0:0:00| chol 4✓
4
28|1.000|1.000|1.4e-10|1.5e-12|3.2e-01|-4.175728e-01 -7.420651e-01| 0:0:00| chol 6✓
6
29|0.980|0.976|3.4e-11|2.3e-12|4.9e-02|-6.880908e-01 -7.367176e-01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30 ^ 4
30|0.664|0.535|1.4e-09|4.4e-12|1.7e-02|-7.191916e-01 -7.363987e-01| 0:0:00| lu 30✓
^22
31|1.000|1.000|1.0e-07|5.1e-12|1.2e-02|-7.240302e-01 -7.363942e-01| 0:0:00| lu 11 ^✓
6
32|0.210|0.243|8.6e-08|1.1e-11|9.6e-03|-7.266468e-01 -7.363691e-01| 0:0:00| lu 18✓
30
33|0.134|1.000|6.2e-08|1.1e-11|9.3e-03|-7.270179e-01 -7.363745e-01| 0:0:00| lu 30✓
30
34|0.306|1.000|5.3e-08|1.7e-11|8.5e-03|-7.278379e-01 -7.364009e-01| 0:0:00| lu 16✓
^27
35|0.036|0.101|4.9e-08|4.1e-11|8.4e-03|-7.279322e-01 -7.363751e-01| 0:0:00|
  stop: progress is bad
----
 number of iterations   = 35
 primal objective value = -7.26646770e-01
 dual   objective value = -7.36369143e-01
 gap := trace(XZ)   = 9.65e-03
 relative gap   = 3.92e-03
 actual relative gap   = 3.95e-03
 rel. primal infeas   = 8.59e-08
 rel. dual   infeas   = 1.14e-11

```
 norm(X), norm(y), norm(Z) = 3.7e+01, 1.0e+02, 7.6e+01
 norm(A), norm(b), norm(C) = 1.9e+05, 4.5e+05, 7.7e+01
 Total CPU time (secs)  = 0.39
 CPU time per iteration = 0.01
 termination code       = -5
 DIMACS errors: 1.6e-07  0.0e+00  1.6e-11  0.0e+00  3.9e-03  3.9e-03
-------------------------------------------------------------------
```

ans =

    0.7364

```
Iteration   6   Total error is: 0.0035027

 num. of constraints = 85
 dim. of socp   var = 86,   num. of socp blk =  1
 dim. of linear var = 800
***********************************************************************
   SDPT3: Infeasible path-following algorithms
***********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM       1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap       prim-obj        dual-obj     cputime
-------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|1.2e+03|6.4e+09| 1.273929e+07  0.000000e+00| 0:0:00| chol  1✔
1
 1|1.000|0.987|4.4e-08|1.5e+01|1.1e+08| 1.265155e+07 -2.406853e+04| 0:0:00| chol  2✔
2
 2|1.000|0.793|1.9e-09|3.1e+00|3.2e+07| 1.075975e+07 -1.037170e+04| 0:0:00| chol  2✔
2
 3|0.280|0.553|2.0e-09|1.4e+00|2.1e+07| 1.028928e+07 -3.130413e+04| 0:0:00| chol  1✔
2
 4|0.250|0.453|1.8e-09|7.6e-01|1.6e+07| 9.925288e+06 -6.316932e+04| 0:0:00| chol  1✔
2
 5|0.238|0.384|1.9e-09|4.7e-01|1.3e+07| 9.479166e+06 -1.003583e+05| 0:0:00| chol  2✔
2
 6|0.164|0.444|2.0e-09|2.6e-01|1.2e+07| 9.079549e+06 -1.561022e+05| 0:0:00| chol  2✔
2
 7|0.261|0.366|1.7e-09|1.7e-01|1.0e+07| 8.338865e+06 -2.094843e+05| 0:0:00| chol  2✔
2
 8|0.148|0.554|1.7e-09|7.5e-02|8.9e+06| 7.877187e+06 -2.821152e+05| 0:0:00| chol  2✔
2
 9|0.401|0.294|1.6e-09|5.3e-02|7.6e+06| 6.689500e+06 -3.260901e+05| 0:0:00| chol  2✔
2
10|0.118|0.851|1.4e-09|7.9e-03|6.9e+06| 6.378427e+06 -3.633014e+05| 0:0:00| chol  2✔
2
11|0.506|0.284|7.6e-10|5.7e-03|5.7e+06| 5.240517e+06 -3.898921e+05| 0:0:00| chol  3✔
3
12|0.334|1.000|1.4e-08|9.0e-05|5.1e+06| 4.815235e+06 -2.873435e+05| 0:0:00| chol  2✔
2
13|1.000|1.000|1.1e-07|4.5e-05|3.2e+06| 2.792066e+06 -4.546207e+05| 0:0:00| chol  1✔
2
14|1.000|1.000|2.5e-08|2.3e-05|1.7e+06| 1.536591e+06 -1.970356e+05| 0:0:00| chol  2✔
2
```

```
15|0.854|1.000|7.7e-09|1.1e-05|6.2e+05| 4.933893e+05 -1.258034e+05| 0:0:00| chol  1↙
2
16|1.000|1.000|1.5e-09|5.6e-06|2.7e+05| 2.253261e+05 -4.429573e+04| 0:0:00| chol  2↙
2
17|1.000|1.000|7.5e-10|2.8e-06|9.3e+04| 6.910491e+04 -2.424316e+04| 0:0:00| chol  2↙
2
18|1.000|1.000|1.3e-10|1.4e-06|3.9e+04| 3.130832e+04 -7.404609e+03| 0:0:00| chol  1↙
2
19|1.000|1.000|4.8e-11|7.0e-07|1.3e+04| 9.738580e+03 -3.336285e+03| 0:0:00| chol  2↙
2
20|1.000|1.000|6.1e-12|7.0e-08|5.1e+03| 4.149287e+03 -9.466849e+02| 0:0:00| chol  2↙
2
21|1.000|1.000|3.6e-12|7.0e-09|1.6e+03| 1.206084e+03 -3.747251e+02| 0:0:00| chol  2↙
2
22|1.000|1.000|1.1e-12|7.1e-10|6.5e+02| 5.481228e+02 -9.966434e+01| 0:0:00| chol  1↙
1
23|0.991|1.000|3.8e-11|7.1e-11|1.7e+02| 1.391904e+02 -3.039428e+01| 0:0:00| chol  2↙
2
24|1.000|1.000|1.2e-12|8.5e-12|7.4e+01| 6.586231e+01 -8.408520e+00| 0:0:00| chol  2↙
2
25|0.947|1.000|7.7e-13|1.7e-12|1.5e+01| 1.323538e+01 -1.350434e+00| 0:0:00| chol  2↙
2
26|1.000|1.000|2.0e-12|1.1e-12|6.1e+00| 5.470312e+00 -6.101590e-01| 0:0:00| chol  3↙
3
27|0.987|1.000|3.9e-12|1.0e-12|1.0e+00| 7.454437e-01 -3.018612e-01| 0:0:00| chol  4↙
4
28|1.000|1.000|4.3e-11|1.0e-12|3.3e-01| 5.323810e-02 -2.764173e-01| 0:0:00| chol  5↙
5
29|0.943|0.961|2.7e-11|1.5e-12|4.6e-02|-2.242513e-01 -2.706627e-01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30  30
30|0.974|0.999|1.3e-09|2.3e-12|1.2e-02|-2.586757e-01 -2.702712e-01| 0:0:00| lu 30↙
30
31|1.000|0.884|9.7e-09|3.6e-12|4.0e-03|-2.662203e-01 -2.702364e-01| 0:0:00| lu 30↙
30
32|0.749|1.000|1.5e-08|5.1e-12|2.2e-03|-2.680011e-01 -2.702338e-01| 0:0:00| lu 30↙
30
33|1.000|1.000|5.8e-09|7.6e-12|1.2e-03|-2.689966e-01 -2.702334e-01| 0:0:00| lu 19↙
30
34|0.507|0.840|9.8e-09|1.3e-11|7.5e-04|-2.694590e-01 -2.702328e-01| 0:0:00| lu 23↙
^13
35|0.300|1.000|1.6e-08|1.7e-11|6.7e-04|-2.695330e-01 -2.702333e-01| 0:0:00| lu 11 ^↙
6
36|0.068|0.126|9.5e-09|4.1e-11|6.3e-04|-2.695742e-01 -2.702332e-01| 0:0:00|
  stop: progress is too slow
  stop: progress is bad*
-------------------------------------------------------------------
 number of iterations   = 36
 primal objective value = -2.69458985e-01
 dual   objective value = -2.70232769e-01
 gap := trace(XZ)       = 7.53e-04
 relative gap           = 4.89e-04
 actual relative gap    = 5.03e-04
 rel. primal infeas     = 9.76e-09
```

```
 rel. dual   infeas     = 1.26e-11
 norm(X), norm(y), norm(Z) = 3.7e+01, 1.0e+02, 7.7e+01
 norm(A), norm(b), norm(C) = 1.9e+05, 4.6e+05, 7.7e+01
 Total CPU time (secs)  = 0.45
 CPU time per iteration = 0.01
 termination code       = -5
 DIMACS errors: 1.8e-08  0.0e+00  1.8e-11  0.0e+00  5.0e-04  4.9e-04
---------------------------------------------------------------------


ans =

    0.2702


Iteration   7   Total error is: 0.0021221

 num. of constraints = 85
 dim. of socp   var = 86,   num. of socp blk  = 1
 dim. of linear var  = 800
*********************************************************************
   SDPT3: Infeasible path-following algorithms
*********************************************************************
 version  predcorr  gam  expon  scale_data
   HKM       1      0.000   1         0
it pstep dstep pinfeas dinfeas gap        prim-obj       dual-obj      cputime
---------------------------------------------------------------------
 0|0.000|0.000|1.0e+00|1.2e+03|6.5e+09| 1.283501e+07  0.000000e+00| 0:0:00| chol 1↙
1
 1|1.000|0.987|4.3e-08|1.5e+01|1.1e+08| 1.274662e+07 -2.465194e+04| 0:0:00| chol 2↙
2
 2|1.000|0.794|1.8e-09|3.1e+00|3.2e+07| 1.078270e+07 -1.020443e+04| 0:0:00| chol 2↙
2
 3|0.280|0.553|2.0e-09|1.4e+00|2.1e+07| 1.030406e+07 -3.110165e+04| 0:0:00| chol 1↙
1
 4|0.250|0.453|1.7e-09|7.7e-01|1.6e+07| 9.937712e+06 -6.299610e+04| 0:0:00| chol 2↙
1
 5|0.239|0.383|1.8e-09|4.8e-01|1.3e+07| 9.488404e+06 -1.001108e+05| 0:0:00| chol 2↙
2
 6|0.163|0.444|1.9e-09|2.6e-01|1.2e+07| 9.091037e+06 -1.561386e+05| 0:0:00| chol 2↙
2
 7|0.261|0.364|1.7e-09|1.7e-01|1.0e+07| 8.347939e+06 -2.096424e+05| 0:0:00| chol 2↙
2
 8|0.147|0.556|1.8e-09|7.5e-02|8.9e+06| 7.891012e+06 -2.833614e+05| 0:0:00| chol 2↙
2
 9|0.404|0.292|1.3e-09|5.3e-02|7.6e+06| 6.699374e+06 -3.275152e+05| 0:0:00| chol 2↙
2
10|0.116|0.863|1.9e-09|7.3e-03|6.9e+06| 6.390246e+06 -3.624451e+05| 0:0:00| chol 2↙
2
11|0.494|0.288|9.5e-09|5.2e-03|5.8e+06| 5.270695e+06 -3.900886e+05| 0:0:00| chol 2↙
3
12|0.327|1.000|9.1e-08|9.0e-05|5.2e+06| 4.865983e+06 -2.814305e+05| 0:0:00| chol 2↙
2
13|1.000|1.000|5.7e-08|4.5e-05|3.2e+06| 2.725753e+06 -4.559718e+05| 0:0:00| chol 2↙
2
14|1.000|1.000|7.0e-09|2.3e-05|1.7e+06| 1.521396e+06 -1.976672e+05| 0:0:00| chol 2↙
```

```
2
15|0.866|1.000|6.6e-09|1.1e-05|6.0e+05| 4.780496e+05 -1.196951e+05| 0:0:00| chol  1↙
1
16|1.000|1.000|9.8e-10|5.6e-06|2.6e+05| 2.206995e+05 -4.388171e+04| 0:0:00| chol  2↙
1
17|1.000|1.000|5.3e-10|2.8e-06|9.1e+04| 6.784412e+04 -2.345063e+04| 0:0:00| chol  1↙
1
18|1.000|1.000|8.0e-11|1.4e-06|3.8e+04| 3.040775e+04 -7.190443e+03| 0:0:00| chol  1↙
2
19|1.000|1.000|5.2e-11|7.0e-07|1.3e+04| 9.423833e+03 -3.248599e+03| 0:0:00| chol  2↙
2
20|1.000|1.000|2.4e-12|7.0e-08|5.0e+03| 4.035323e+03 -9.188876e+02| 0:0:00| chol  2↙
2
21|1.000|1.000|1.5e-12|7.0e-09|1.5e+03| 1.167850e+03 -3.634973e+02| 0:0:00| chol  1↙
1
22|1.000|1.000|6.4e-11|7.1e-10|6.3e+02| 5.323585e+02 -9.684851e+01| 0:0:00| chol  2↙
2
23|0.990|1.000|6.5e-13|7.2e-11|1.6e+02| 1.348191e+02 -2.929358e+01| 0:0:00| chol  2↙
2
24|1.000|1.000|5.3e-13|8.0e-12|7.2e+01| 6.372477e+01 -8.078956e+00| 0:0:00| chol  2↙
2
25|0.946|1.000|5.1e-13|1.7e-12|1.4e+01| 1.301411e+01 -1.192888e+00| 0:0:00| chol  2↙
2
26|1.000|1.000|2.4e-11|1.1e-12|6.0e+00| 5.540283e+00 -4.517037e-01| 0:0:00| chol  3↙
2
27|0.992|1.000|1.7e-11|1.5e-12|1.1e+00| 9.487096e-01 -1.348505e-01| 0:0:00| chol  4↙
4
28|1.000|1.000|4.9e-11|2.3e-12|3.9e-01| 2.822559e-01 -1.063664e-01| 0:0:00| chol  5↙
6
29|0.943|0.962|1.8e-11|3.5e-12|5.1e-02|-4.739714e-02 -9.832826e-02| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30  30
30|0.952|0.984|8.5e-10|3.7e-12|1.2e-02|-8.550903e-02 -9.779491e-02| 0:0:00| lu 30↙
^22
31|0.560|0.485|1.4e-09|7.3e-12|5.5e-03|-9.220262e-02 -9.775313e-02| 0:0:00| lu 30↙
30
32|1.000|0.682|1.5e-08|1.0e-11|3.6e-03|-9.417969e-02 -9.774272e-02| 0:0:00| lu *21 ^↙
5
33|0.474|1.000|4.8e-09|1.2e-11|2.6e-03|-9.516976e-02 -9.774198e-02| 0:0:00| lu 30↙
30
34|0.498|0.340|6.9e-08|2.6e-11|2.2e-03|-9.550638e-02 -9.774234e-02| 0:0:00| lu 30↙
30
35|0.113|0.353|7.1e-08|4.5e-11|2.1e-03|-9.559480e-02 -9.774248e-02| 0:0:00| lu 13 ^↙
8
36|0.110|0.146|7.9e-08|7.9e-11|2.0e-03|-9.573954e-02 -9.774234e-02| 0:0:00|
  stop: progress is bad
------------------------------------------------------------------
 number of iterations   = 36
 primal objective value = -9.57395441e-02
 dual   objective value = -9.77423377e-02
 gap := trace(XZ)       = 2.00e-03
 relative gap           = 1.68e-03
 actual relative gap    = 1.68e-03
 rel. primal infeas     = 7.89e-08
```

```
 rel. dual    infeas      = 7.93e-11
 norm(X), norm(y), norm(Z) = 3.7e+01, 1.0e+02, 7.7e+01
 norm(A), norm(b), norm(C) = 2.0e+05, 4.7e+05, 7.7e+01
 Total CPU time (secs)  = 0.48
 CPU time per iteration = 0.01
 termination code       = -5
 DIMACS errors: 1.5e-07  0.0e+00  1.1e-10  0.0e+00  1.7e-03  1.7e-03
-------------------------------------------------------------------


ans =

    0.0977


Iteration   8    Total error is: 0.0012762
The total representation error of the testing signals is: 0.011795
>>
```