```
 9|0.936|0.777|2.8e-10|5.2e-07|1.8e+04| 1.419846e+04 -3.168177e+03| 0:0:00| chol  1↙
2
10|0.612|1.000|2.7e-10|2.1e-07|1.2e+04| 1.019901e+04 -1.678861e+03| 0:0:00| chol  1↙
2
11|0.954|1.000|2.5e-10|1.1e-07|5.0e+03| 3.671468e+03 -1.324650e+03| 0:0:00| chol  2↙
2
12|1.000|0.977|9.7e-11|5.4e-08|1.7e+03| 7.819018e+02 -9.444848e+02| 0:0:00| chol  2↙
2
13|0.867|1.000|6.8e-11|2.6e-08|5.9e+02|-3.188293e+02 -9.112903e+02| 0:0:00| chol  2↙
2
14|1.000|0.975|7.6e-11|1.4e-08|2.1e+02|-6.434175e+02 -8.492323e+02| 0:0:00| chol  2↙
2
15|0.892|1.000|4.0e-11|6.6e-09|3.2e+01|-8.130132e+02 -8.446389e+02| 0:0:00| chol  2↙
2
16|1.000|0.943|1.1e-09|3.5e-09|8.8e+00|-8.346413e+02 -8.432778e+02| 0:0:00| chol  2↙
2
17|0.870|1.000|4.1e-10|1.7e-09|1.3e+00|-8.420263e+02 -8.432572e+02| 0:0:00| chol  3↙
3
18|1.000|0.893|4.1e-09|9.3e-10|4.7e-01|-8.428668e+02 -8.432821e+02| 0:0:00| chol  2↙
2
19|0.965|0.993|2.4e-09|4.4e-10|1.9e-02|-8.433156e+02 -8.433094e+02| 0:0:00| chol  2↙
2
20|0.985|0.987|5.3e-10|6.0e-12|3.2e-04|-8.433329e+02 -8.433329e+02| 0:0:00| chol  5↙
7
21|0.944|0.984|7.7e-11|1.2e-13|1.8e-05|-8.433332e+02 -8.433332e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.43333161e+02
 dual   objective value = -8.43333169e+02
 gap := trace(XZ)       = 1.76e-05
 relative gap           = 1.05e-08
 actual relative gap    = 4.75e-09
 rel. primal infeas     = 7.68e-11
 rel. dual   infeas     = 1.23e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.1e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-10  0.0e+00  1.7e-13  0.0e+00  4.7e-09  1.0e-08
-------------------------------------------------------------------

ans =

  843.3332

Epoch... 127
Epoch... 128

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
```

```
   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|1.0e+01|3.3e+09| 1.050265e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.932|0.929|6.8e-02|7.4e-01|4.0e+08| 9.206344e+07  5.754767e+06| 0:0:00| chol  1↙
1
 2|0.636|0.632|2.5e-02|2.7e-01|2.1e+08| 7.316892e+07  5.434802e+06| 0:0:00| chol  1↙
1
 3|0.618|0.623|9.4e-03|1.0e-01|1.2e+08| 5.720756e+07  4.214526e+06| 0:0:00| chol  1↙
1
 4|0.724|0.735|2.6e-03|2.7e-02|6.1e+07| 3.867642e+07  1.889443e+06| 0:0:00| chol  1↙
1
 5|1.000|0.866|4.5e-09|3.7e-03|2.2e+07| 1.468093e+07  1.185310e+05| 0:0:00| chol  1↙
2
 6|0.986|0.955|4.6e-10|1.6e-04|1.4e+06| 9.823905e+05  3.317397e+03| 0:0:00| chol  2↙
2
 7|0.824|0.835|9.5e-10|2.7e-05|4.0e+05| 3.369915e+05 -2.126950e+03| 0:0:00| chol  2↙
1
 8|0.962|0.973|1.0e-10|1.2e-06|1.2e+05| 1.110190e+05 -4.640966e+03| 0:0:00| chol  1↙
2
 9|0.878|1.000|3.5e-10|4.2e-07|4.1e+04| 3.661347e+04 -3.369675e+03| 0:0:00| chol  1↙
1
10|1.000|0.888|1.1e-10|2.3e-07|1.6e+04| 1.352354e+04 -1.974304e+03| 0:0:00| chol  2↙
2
11|0.631|1.000|2.0e-10|1.1e-07|9.4e+03| 7.404777e+03 -1.917476e+03| 0:0:00| chol  1↙
1
12|1.000|0.929|7.4e-11|5.6e-08|3.5e+03| 2.355264e+03 -1.089173e+03| 0:0:00| chol  1↙
2
13|0.874|1.000|9.4e-11|2.6e-08|1.2e+03| 2.485788e+02 -9.892479e+02| 0:0:00| chol  1↙
2
14|1.000|0.989|3.8e-11|1.3e-08|4.2e+02|-4.423868e+02 -8.621622e+02| 0:0:00| chol  2↙
2
15|0.885|1.000|1.2e-10|6.6e-09|9.4e+01|-7.579473e+02 -8.518582e+02| 0:0:00| chol  2↙
2
16|1.000|0.972|3.0e-10|3.4e-09|2.9e+01|-8.168665e+02 -8.458307e+02| 0:0:00| chol  2↙
2
17|0.923|1.000|5.2e-10|1.7e-09|2.4e+00|-8.431855e+02 -8.454800e+02| 0:0:00| chol  2↙
2
18|0.808|1.000|1.4e-09|8.5e-10|1.1e+00|-8.443601e+02 -8.454481e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|2.9e-10|4.5e-10|3.5e-01|-8.451350e+02 -8.454626e+02| 0:0:00| chol  2↙
2
20|0.975|0.985|8.8e-10|6.3e-11|9.7e-03|-8.454747e+02 -8.454808e+02| 0:0:00| chol  2↙
3
21|0.985|0.988|8.3e-10|9.7e-13|1.5e-04|-8.454833e+02 -8.454834e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.45483270e+02
 dual   objective value = -8.45483368e+02
```

```
 gap := trace(XZ)       = 1.55e-04
 relative gap           = 9.16e-08
 actual relative gap    = 5.78e-08
 rel. primal infeas     = 8.30e-10
 rel. dual   infeas     = 9.69e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.2e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.2e-09  0.0e+00  1.4e-12  0.0e+00  5.8e-08  9.2e-08
------------------------------------------------------------------

ans =

  845.4834

Epoch... 129
Epoch... 130

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.3e+09| 1.067793e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.931|0.928|6.9e-02|7.6e-01|4.1e+08| 9.348821e+07  5.920509e+06| 0:0:00| chol  1↙
1
 2|0.635|0.631|2.5e-02|2.8e-01|2.2e+08| 7.451074e+07  5.597104e+06| 0:0:00| chol  1↙
1
 3|0.617|0.622|9.6e-03|1.1e-01|1.2e+08| 5.837192e+07  4.349281e+06| 0:0:00| chol  1↙
1
 4|0.721|0.734|2.7e-03|2.8e-02|6.3e+07| 3.958077e+07  1.964544e+06| 0:0:00| chol  1↙
1
 5|1.000|0.864|6.7e-10|3.9e-03|2.2e+07| 1.514044e+07  1.319615e+05| 0:0:00| chol  2↙
2
 6|0.987|0.955|4.7e-10|1.8e-04|1.5e+06| 1.011129e+06  4.019370e+03| 0:0:00| chol  2↙
2
 7|0.831|0.833|7.3e-10|3.0e-05|4.0e+05| 3.357675e+05 -1.839327e+03| 0:0:00| chol  2↙
1
 8|0.959|0.940|9.4e-11|2.1e-06|1.2e+05| 1.132281e+05 -4.457609e+03| 0:0:00| chol  1↙
2
 9|0.856|1.000|2.7e-10|4.2e-07|4.5e+04| 4.021429e+04 -3.417845e+03| 0:0:00| chol  1↙
1
10|1.000|0.925|8.0e-11|2.3e-07|1.6e+04| 1.421149e+04 -2.006052e+03| 0:0:00| chol  2↙
2
11|0.621|1.000|2.2e-10|1.1e-07|1.0e+04| 7.931096e+03 -1.973309e+03| 0:0:00| chol  1↙
1
```

```
12|1.000|0.926|6.7e-11|5.7e-08|3.6e+03| 2.507074e+03 -1.105244e+03| 0:0:00| chol  2↙
2
13|0.878|1.000|1.5e-10|2.6e-08|1.3e+03| 3.101996e+02 -9.965012e+02| 0:0:00| chol  2↙
2
14|1.000|0.991|4.2e-11|1.3e-08|4.4e+02|-4.189919e+02 -8.624320e+02| 0:0:00| chol  2↙
2
15|0.886|1.000|1.8e-10|6.6e-09|1.0e+02|-7.490781e+02 -8.514383e+02| 0:0:00| chol  2↙
2
16|1.000|0.977|3.2e-11|3.4e-09|3.2e+01|-8.127716e+02 -8.446111e+02| 0:0:00| chol  2↙
2
17|0.926|1.000|8.4e-11|1.7e-09|2.5e+00|-8.418031e+02 -8.442101e+02| 0:0:00| chol  2↙
2
18|0.772|1.000|3.8e-09|8.3e-10|1.2e+00|-8.430020e+02 -8.441763e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|8.1e-11|4.3e-10|3.9e-01|-8.438196e+02 -8.441859e+02| 0:0:00| chol  2↙
2
20|0.976|0.988|2.0e-09|6.2e-11|1.0e-02|-8.441979e+02 -8.442048e+02| 0:0:00| chol  3↙
3
21|0.985|0.988|1.0e-10|9.9e-13|1.7e-04|-8.442072e+02 -8.442073e+02| 0:0:00| chol
  warning: symqmr failed: 0.3
  switch to LU factor. lu 30   1
22|0.970|0.989|1.6e-10|1.9e-14|5.1e-06|-8.442073e+02 -8.442073e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -8.44207320e+02
 dual   objective value = -8.44207323e+02
 gap := trace(XZ)       = 5.13e-06
 relative gap           = 3.03e-09
 actual relative gap    = 1.86e-09
 rel. primal infeas     = 1.59e-10
 rel. dual   infeas     = 1.95e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-10  0.0e+00  2.8e-14  0.0e+00  1.9e-09  3.0e-09
-----------------------------------------------------------------

ans =

  844.2073

Epoch... 131
Epoch... 132

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|4.2e+09| 1.372442e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.933|0.930|6.7e-02|7.5e-01|5.2e+08| 1.186604e+08  5.873962e+06| 0:0:00| chol  1↙
1
 2|0.649|0.644|2.4e-02|2.7e-01|2.7e+08| 9.362423e+07  5.524022e+06| 0:0:00| chol  1↙
1
 3|0.636|0.638|8.6e-03|9.7e-02|1.5e+08| 7.195452e+07  4.191872e+06| 0:0:00| chol  1↙
1
 4|0.757|0.752|2.1e-03|2.4e-02|8.1e+07| 4.677113e+07  1.709257e+06| 0:0:00| chol  1↙
2
 5|1.000|0.902|8.6e-10|2.4e-03|2.6e+07| 1.762986e+07 -3.923604e+04| 0:0:00| chol  2↙
2
 6|0.988|0.961|2.4e-10|9.2e-05|1.7e+06| 1.148432e+06 -4.229112e+03| 0:0:00| chol  2↙
2
 7|0.866|0.888|3.2e-10|1.1e-05|3.9e+05| 3.314640e+05 -4.920187e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|4.7e-11|8.4e-07|9.6e+04| 8.625112e+04 -5.298017e+03| 0:0:00| chol  2↙
1
 9|0.794|0.744|1.9e-10|5.3e-07|2.6e+04| 2.198229e+04 -3.186188e+03| 0:0:00| chol  2↙
2
10|0.601|1.000|1.9e-10|2.1e-07|1.8e+04| 1.526636e+04 -2.071417e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.3e-10|1.1e-07|6.9e+03| 5.530162e+03 -1.346770e+03| 0:0:00| chol  2↙
2
12|0.980|1.000|1.4e-10|5.3e-08|2.2e+03| 1.090233e+03 -1.128729e+03| 0:0:00| chol  1↙
2
13|1.000|0.975|6.2e-11|2.7e-08|7.9e+02|-1.176922e+02 -9.031208e+02| 0:0:00| chol  2↙
2
14|0.888|1.000|2.6e-10|1.3e-08|2.2e+02|-6.639842e+02 -8.830225e+02| 0:0:00| chol  2↙
2
15|1.000|0.985|2.9e-10|6.7e-09|7.2e+01|-7.925728e+02 -8.644120e+02| 0:0:00| chol  2↙
2
16|0.921|1.000|3.1e-10|3.3e-09|6.6e+00|-8.568058e+02 -8.632426e+02| 0:0:00| chol  2↙
2
17|0.894|0.935|1.7e-10|1.8e-09|2.4e+00|-8.607477e+02 -8.630379e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|9.2e-09|8.6e-10|7.1e-01|-8.623978e+02 -8.630610e+02| 0:0:00| chol  2↙
2
19|0.972|0.977|4.8e-10|4.6e-10|2.4e-02|-8.630817e+02 -8.630797e+02| 0:0:00| chol  3↙
2
20|0.983|0.988|4.7e-10|6.0e-12|4.3e-04|-8.631033e+02 -8.631034e+02| 0:0:00| chol  5↙
5
21|0.989|0.989|8.4e-11|7.5e-14|5.2e-06|-8.631037e+02 -8.631037e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------

 number of iterations   = 21
 primal objective value = -8.63103674e+02
 dual   objective value = -8.63103672e+02
 gap := trace(XZ)       = 5.18e-06
 relative gap           = 3.00e-09
 actual relative gap    = -1.13e-09
```

```
 rel. primal infeas     = 8.41e-11
 rel. dual   infeas     = 7.47e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.2e-10  0.0e+00  1.1e-13  0.0e+00  -1.1e-09  3.0e-09
------------------------------------------------------------------

ans =

  863.1037

Epoch... 133
Epoch... 134

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.6e+09| 1.165550e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.933|0.930|6.7e-02|7.5e-01|4.4e+08| 1.015615e+08  5.830775e+06| 0:0:00| chol  1↙
1
 2|0.641|0.636|2.4e-02|2.7e-01|2.3e+08| 8.044315e+07  5.493310e+06| 0:0:00| chol  1↙
1
 3|0.624|0.628|9.1e-03|1.0e-01|1.3e+08| 6.248553e+07  4.220059e+06| 0:0:00| chol  1↙
1
 4|0.736|0.742|2.4e-03|2.6e-02|6.6e+07| 4.162191e+07  1.821210e+06| 0:0:00| chol  1↙
1
 5|1.000|0.877|6.6e-10|3.2e-03|2.2e+07| 1.512141e+07  6.747815e+04| 0:0:00| chol  2↙
2
 6|0.986|0.955|3.3e-10|1.4e-04|1.4e+06| 9.978946e+05  4.031540e+02| 0:0:00| chol  2↙
2
 7|0.813|0.845|3.5e-10|2.3e-05|4.0e+05| 3.363404e+05 -3.186979e+03| 0:0:00| chol  2↙
2
 8|0.964|1.000|5.8e-11|8.4e-07|1.2e+05| 1.113579e+05 -5.069698e+03| 0:0:00| chol  1↙
2
 9|1.000|0.982|4.6e-10|4.3e-07|2.5e+04| 2.119136e+04 -3.231168e+03| 0:0:00| chol  2↙
2
10|0.970|0.714|6.9e-10|2.7e-07|1.3e+04| 1.054481e+04 -2.377080e+03| 0:0:00| chol  2↙
2
11|0.340|0.388|3.5e-10|2.1e-07|1.1e+04| 9.233928e+03 -1.539548e+03| 0:0:00| chol  2↙
2
12|0.606|1.000|1.4e-10|5.3e-08|7.4e+03| 5.698288e+03 -1.713347e+03| 0:0:00| chol  2↙
2
13|1.000|1.000|6.2e-11|2.6e-08|2.6e+03| 1.512046e+03 -1.129603e+03| 0:0:00| chol  2↙
```

```
2
14|1.000|1.000|4.3e-11|1.3e-08|8.4e+02|-1.081784e+02 -9.436004e+02| 0:0:00| chol  2↙
2
15|1.000|1.000|1.3e-10|6.6e-09|2.3e+02|-6.647294e+02 -8.949651e+02| 0:0:00| chol  2↙
2
16|1.000|1.000|5.8e-11|3.3e-09|5.0e+01|-8.316644e+02 -8.819519e+02| 0:0:00| chol  2↙
2
17|0.923|0.981|4.0e-10|1.7e-09|6.9e+00|-8.737251e+02 -8.804860e+02| 0:0:00| chol  2↙
2
18|0.909|1.000|4.2e-10|8.4e-10|2.3e+00|-8.781318e+02 -8.803632e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|9.7e-09|4.4e-10|6.8e-01|-8.797174e+02 -8.803735e+02| 0:0:00| chol  2↙
2
20|0.971|0.969|4.1e-10|9.3e-11|2.5e-02|-8.803665e+02 -8.803857e+02| 0:0:00| chol  2↙
2
21|0.983|0.989|7.4e-10|1.8e-12|4.3e-04|-8.803882e+02 -8.803885e+02| 0:0:00| chol  4↙
4
22|0.780|0.989|2.3e-10|1.6e-13|8.9e-05|-8.803885e+02 -8.803886e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -8.80388477e+02
 dual   objective value = -8.80388557e+02
 gap := trace(XZ)       = 8.88e-05
 relative gap           = 5.04e-08
 actual relative gap    = 4.53e-08
 rel. primal infeas     = 2.34e-10
 rel. dual   infeas     = 1.60e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.3e-10  0.0e+00  2.3e-13  0.0e+00  4.5e-08  5.0e-08
-----------------------------------------------------------------

ans =

  880.3886

Epoch... 135
Epoch... 136

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|4.0e+09| 1.309122e+08  0.000000e+00| 0:0:00| chol  2↙
```

```
2
 1|0.931|0.928|6.9e-02|7.8e-01|5.0e+08| 1.133786e+08  6.030465e+06| 0:0:00| chol  1↙
1
 2|0.645|0.640|2.5e-02|2.8e-01|2.6e+08| 9.007548e+07  5.684263e+06| 0:0:00| chol  1↙
1
 3|0.630|0.633|9.1e-03|1.0e-01|1.5e+08| 6.974118e+07  4.345596e+06| 0:0:00| chol  1↙
2
 4|0.746|0.746|2.3e-03|2.6e-02|7.2e+07| 4.597071e+07  1.830875e+06| 0:0:00| chol  1↙
2
 5|1.000|0.885|2.7e-09|3.0e-03|2.4e+07| 1.614639e+07  3.338390e+04| 0:0:00| chol  2↙
2
 6|0.986|0.956|4.0e-10|1.3e-04|1.5e+06| 1.048849e+06 -1.691852e+03| 0:0:00| chol  2↙
2
 7|0.816|0.852|3.3e-10|2.0e-05|4.0e+05| 3.352385e+05 -3.922300e+03| 0:0:00| chol  2↙
2
 8|0.957|1.000|6.4e-11|8.4e-07|1.3e+05| 1.153328e+05 -5.300477e+03| 0:0:00| chol  2↙
2
 9|1.000|0.913|4.2e-10|4.6e-07|2.4e+04| 2.001066e+04 -3.352974e+03| 0:0:00| chol  1↙
2
10|0.596|1.000|2.4e-10|2.1e-07|1.6e+04| 1.322449e+04 -2.566978e+03| 0:0:00| chol  2↙
2
11|1.000|0.766|4.8e-10|1.3e-07|7.2e+03| 5.598555e+03 -1.515954e+03| 0:0:00| chol  2↙
2
12|0.789|1.000|7.9e-11|5.3e-08|3.2e+03| 1.862763e+03 -1.282885e+03| 0:0:00| chol  2↙
2
13|1.000|0.930|7.0e-11|2.8e-08|1.1e+03| 2.004240e+02 -9.410495e+02| 0:0:00| chol  2↙
2
14|0.872|1.000|4.4e-11|1.3e-08|3.5e+02|-5.579028e+02 -9.081419e+02| 0:0:00| chol  1↙
2
15|1.000|0.977|3.5e-11|6.7e-09|1.2e+02|-7.570311e+02 -8.748552e+02| 0:0:00| chol  2↙
2
16|0.904|1.000|1.3e-10|3.3e-09|1.5e+01|-8.580160e+02 -8.725019e+02| 0:0:00| chol  1↙
2
17|1.000|0.902|2.6e-11|1.8e-09|4.2e+00|-8.677624e+02 -8.718429e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|1.7e-10|8.3e-10|1.2e+00|-8.706370e+02 -8.718113e+02| 0:0:00| chol  2↙
2
19|0.916|1.000|3.1e-09|4.2e-10|1.4e-01|-8.717168e+02 -8.718281e+02| 0:0:00| chol  2↙
3
20|1.000|0.982|5.4e-09|1.9e-11|1.3e-02|-8.718384e+02 -8.718499e+02| 0:0:00| chol  3↙
3
21|0.985|0.989|3.4e-10|5.3e-13|2.0e-04|-8.718501e+02 -8.718503e+02| 0:0:00| chol  5↙
10
22|0.989|0.989|2.1e-09|9.8e-15|2.5e-06|-8.718503e+02 -8.718503e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -8.71850302e+02
 dual   objective value = -8.71850306e+02
 gap := trace(XZ)       = 2.52e-06
 relative gap           = 1.45e-09
 actual relative gap    = 2.10e-09
 rel. primal infeas     = 2.13e-09
 rel. dual   infeas     = 9.84e-15
```

```
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.8e-09  0.0e+00  1.4e-14  0.0e+00  2.1e-09  1.4e-09
------------------------------------------------------------------

ans =

  871.8503

Epoch... 137
Epoch... 138

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.5e+09| 1.836433e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.930|0.927|7.0e-02|8.1e-01|6.9e+08| 1.569411e+08  6.239616e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.3e-02|2.8e-01|3.5e+08| 1.239462e+08  5.856403e+06| 0:0:00| chol  1↙
2
 3|0.656|0.653|8.1e-03|9.7e-02|1.9e+08| 9.372574e+07  4.349348e+06| 0:0:00| chol  1↙
1
 4|0.795|0.769|1.7e-03|2.2e-02|1.0e+08| 5.821979e+07  1.586249e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.7e-10|1.7e-03|2.7e+07| 1.849276e+07 -1.133814e+05| 0:0:00| chol  2↙
2
 6|0.987|0.962|2.1e-10|6.4e-05|1.7e+06| 1.191102e+06 -7.657991e+03| 0:0:00| chol  2↙
2
 7|0.899|0.938|4.5e-10|4.6e-06|3.8e+05| 3.243131e+05 -6.267659e+03| 0:0:00| chol  2↙
2
 8|1.000|1.000|2.1e-11|8.4e-07|5.0e+04| 4.230833e+04 -5.046442e+03| 0:0:00| chol  1↙
1
 9|0.751|0.737|2.4e-10|5.3e-07|2.5e+04| 2.167647e+04 -2.842702e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|1.1e-10|2.1e-07|1.2e+04| 9.599919e+03 -1.788144e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.1e-10|1.1e-07|3.6e+03| 2.355130e+03 -1.167357e+03| 0:0:00| chol  1↙
2
12|1.000|1.000|7.0e-11|5.3e-08|1.2e+03| 2.203633e+02 -9.775648e+02| 0:0:00| chol  2↙
2
13|1.000|1.000|5.8e-11|2.6e-08|3.6e+02|-5.332061e+02 -8.865565e+02| 0:0:00| chol  2↙
2
14|0.943|1.000|4.8e-11|1.3e-08|8.4e+01|-7.899765e+02 -8.726621e+02| 0:0:00| chol  2↙
```

```
2
15|1.000|1.000|1.7e-10|6.6e-09|2.5e+01|-8.440318e+02 -8.684560e+02| 0:0:00| chol  2↙
2
16|0.898|0.919|1.1e-09|3.6e-09|2.9e+00|-8.651505e+02 -8.678249e+02| 0:0:00| chol  2↙
2
17|0.933|0.934|4.7e-09|1.8e-09|1.1e+00|-8.668524e+02 -8.678233e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|9.0e-09|8.6e-10|3.4e-01|-8.675748e+02 -8.678676e+02| 0:0:00| chol  2↙
2
19|0.982|0.967|2.2e-10|4.4e-10|8.1e-03|-8.679034e+02 -8.678864e+02| 0:0:00| chol  2↙
2
20|0.984|0.989|2.5e-10|5.0e-12|1.4e-04|-8.679106e+02 -8.679104e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -8.67910585e+02
 dual   objective value = -8.67910434e+02
 gap := trace(XZ)       = 1.40e-04
 relative gap           = 8.04e-08
 actual relative gap    = -8.66e-08
 rel. primal infeas     = 2.54e-10
 rel. dual   infeas     = 5.02e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.5e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.2e-10  0.0e+00  7.1e-12  0.0e+00  -8.7e-08  8.0e-08
-----------------------------------------------------------------

ans =

  867.9107

Epoch... 139
Epoch... 140

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|5.4e+09| 1.795994e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.931|0.928|6.9e-02|8.0e-01|6.8e+08| 1.535980e+08  6.170166e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.3e-02|2.8e-01|3.4e+08| 1.211259e+08  5.787554e+06| 0:0:00| chol  1↙
1
 3|0.655|0.652|8.0e-03|9.6e-02|1.9e+08| 9.160924e+07  4.298320e+06| 0:0:00| chol  1↙
```

```
1
 4|0.793|0.768|1.7e-03|2.2e-02|9.7e+07| 5.698208e+07  1.571156e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.6e-10|1.7e-03|2.7e+07| 1.821330e+07 -1.106408e+05| 0:0:00| chol  2↙
2
 6|0.987|0.962|1.4e-10|6.4e-05|1.7e+06| 1.179140e+06 -8.154934e+03| 0:0:00| chol  2↙
2
 7|0.897|0.939|2.7e-10|4.5e-06|3.8e+05| 3.230991e+05 -6.556931e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|3.2e-11|8.4e-07|5.1e+04| 4.309985e+04 -5.151024e+03| 0:0:00| chol  1↙
2
 9|0.740|0.761|2.5e-10|5.2e-07|2.6e+04| 2.262996e+04 -2.864030e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|2.2e-10|2.1e-07|1.2e+04| 9.793133e+03 -1.870021e+03| 0:0:00| chol  2↙
2
11|1.000|0.994|1.2e-10|1.1e-07|3.8e+03| 2.651574e+03 -1.140434e+03| 0:0:00| chol  2↙
2
12|0.822|1.000|1.2e-10|5.3e-08|1.7e+03| 5.738228e+02 -1.076452e+03| 0:0:00| chol  2↙
2
13|1.000|0.996|3.8e-11|2.6e-08|5.9e+02|-3.093987e+02 -8.965296e+02| 0:0:00| chol  2↙
2
14|0.884|1.000|1.4e-10|1.3e-08|1.4e+02|-7.413784e+02 -8.809311e+02| 0:0:00| chol  2↙
2
15|1.000|0.973|1.3e-10|6.8e-09|4.4e+01|-8.268465e+02 -8.707188e+02| 0:0:00| chol  2↙
2
16|0.890|1.000|4.3e-10|3.3e-09|5.4e+00|-8.647896e+02 -8.700108e+02| 0:0:00| chol  2↙
2
17|1.000|0.808|3.8e-09|2.0e-09|2.2e+00|-8.677828e+02 -8.698248e+02| 0:0:00| chol  2↙
2
18|0.847|1.000|5.5e-09|8.6e-10|6.3e-01|-8.692795e+02 -8.698594e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|8.8e-09|4.7e-10|1.9e-01|-8.697048e+02 -8.698708e+02| 0:0:00| chol  2↙
2
20|0.968|0.989|9.6e-10|5.7e-11|6.8e-03|-8.698868e+02 -8.698904e+02| 0:0:00| chol  2↙
2
21|0.983|0.989|7.9e-10|8.3e-13|1.3e-04|-8.698928e+02 -8.698929e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.69892830e+02
 dual   objective value = -8.69892907e+02
 gap := trace(XZ)       = 1.26e-04
 relative gap           = 7.23e-08
 actual relative gap    = 4.44e-08
 rel. primal infeas     = 7.89e-10
 rel. dual   infeas     = 8.34e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.0e-09  0.0e+00  1.2e-12  0.0e+00  4.4e-08  7.2e-08
-------------------------------------------------------------------
```

```
ans =

  869.8929

Epoch... 141
Epoch... 142

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.9e+09| 1.990525e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.929|0.926|7.1e-02|8.5e-01|7.6e+08| 1.696585e+08  6.509032e+06| 0:0:00| chol  1↙
1
 2|0.666|0.659|2.4e-02|2.9e-01|3.8e+08| 1.343540e+08  6.109384e+06| 0:0:00| chol  1↙
2
 3|0.660|0.656|8.1e-03|1.0e-01|2.1e+08| 1.013739e+08  4.519217e+06| 0:0:00| chol  1↙
2
 4|0.802|0.772|1.6e-03|2.3e-02|9.7e+07| 6.242047e+07  1.610219e+06| 0:0:00| chol  1↙
2
 5|1.000|0.921|3.3e-10|1.8e-03|2.4e+07| 1.617471e+07 -8.069548e+04| 0:0:00| chol  2↙
2
 6|0.984|0.958|1.6e-10|7.6e-05|1.5e+06| 1.053077e+06 -7.486931e+03| 0:0:00| chol  2↙
2
 7|0.853|0.916|2.1e-10|6.8e-06|4.0e+05| 3.407577e+05 -6.229691e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|1.8e-11|8.4e-07|6.5e+04| 5.719449e+04 -5.342001e+03| 0:0:00| chol  2↙
2
 9|0.780|0.775|2.5e-10|5.2e-07|2.9e+04| 2.466306e+04 -3.061069e+03| 0:0:00| chol  2↙
1
10|1.000|1.000|1.8e-10|2.1e-07|1.3e+04| 1.107922e+04 -1.965732e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.4e-10|1.1e-07|4.0e+03| 2.743951e+03 -1.198198e+03| 0:0:00| chol  1↙
2
12|0.884|1.000|1.2e-10|5.3e-08|1.7e+03| 5.499825e+02 -1.104315e+03| 0:0:00| chol  2↙
2
13|1.000|0.991|6.2e-11|2.7e-08|5.9e+02|-3.333138e+02 -9.218758e+02| 0:0:00| chol  2↙
2
14|0.884|1.000|4.4e-11|1.3e-08|1.4e+02|-7.617344e+02 -9.052790e+02| 0:0:00| chol  2↙
2
15|1.000|0.986|4.2e-10|6.7e-09|4.6e+01|-8.496358e+02 -8.949763e+02| 0:0:00| chol  2↙
2
16|0.895|1.000|1.8e-11|3.3e-09|5.3e+00|-8.891229e+02 -8.942663e+02| 0:0:00| chol  2↙
2
17|1.000|0.813|1.7e-09|2.0e-09|2.1e+00|-8.920748e+02 -8.940802e+02| 0:0:00| chol  2↙
2
18|0.863|1.000|2.7e-09|8.3e-10|6.6e-01|-8.934980e+02 -8.941140e+02| 0:0:00| chol  2↙
```

```
2
19|1.000|1.000|2.3e-09|4.2e-10|2.1e-01|-8.939396e+02 -8.941247e+02| 0:0:00| chol  1↙
2
20|0.978|0.984|5.0e-09|5.6e-11|5.2e-03|-8.941420e+02 -8.941441e+02| 0:0:00| chol  3↙
3
21|0.985|0.989|2.7e-10|7.4e-13|8.3e-05|-8.941467e+02 -8.941467e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.94146684e+02
 dual   objective value = -8.94146729e+02
 gap := trace(XZ)       = 8.34e-05
 relative gap           = 4.66e-08
 actual relative gap    = 2.52e-08
 rel. primal infeas     = 2.68e-10
 rel. dual   infeas     = 7.43e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.7e+05, 1.6e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.4e-10  0.0e+00  1.1e-12  0.0e+00  2.5e-08  4.7e-08
-------------------------------------------------------------------

ans =

  894.1468

Epoch... 143
Epoch... 144

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.9e+09| 1.987234e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.929|0.926|7.1e-02|8.7e-01|7.6e+08| 1.693863e+08  6.637872e+06| 0:0:00| chol  1↙
1
 2|0.664|0.657|2.4e-02|3.0e-01|3.8e+08| 1.343503e+08  6.234057e+06| 0:0:00| chol  1↙
2
 3|0.658|0.654|8.2e-03|1.0e-01|2.1e+08| 1.016203e+08  4.624444e+06| 0:0:00| chol  1↙
1
 4|0.798|0.770|1.7e-03|2.4e-02|9.8e+07| 6.293864e+07  1.672395e+06| 0:0:00| chol  2↙
2
 5|1.000|0.919|7.5e-10|1.9e-03|2.5e+07| 1.687648e+07 -7.986564e+04| 0:0:00| chol  2↙
2
 6|0.985|0.957|3.0e-10|8.3e-05|1.6e+06| 1.091274e+06 -7.547871e+03| 0:0:00| chol  2↙
```

```
2
 7|0.846|0.906|4.4e-10|8.2e-06|4.1e+05| 3.472414e+05 -6.090221e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|1.3e-11|8.4e-07|7.8e+04| 6.943654e+04 -5.491314e+03| 0:0:00| chol  2↙
1
 9|0.778|0.744|2.2e-10|5.3e-07|2.9e+04| 2.517971e+04 -3.234649e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|1.1e-10|2.1e-07|1.4e+04| 1.176443e+04 -2.034589e+03| 0:0:00| chol  2↙
2
11|1.000|0.952|8.3e-11|1.1e-07|4.5e+03| 3.261676e+03 -1.221099e+03| 0:0:00| chol  2↙
2
12|0.823|1.000|1.1e-10|5.3e-08|2.0e+03| 8.186415e+02 -1.150311e+03| 0:0:00| chol  2↙
2
13|1.000|0.978|2.1e-10|2.7e-08|6.8e+02|-2.440512e+02 -9.257550e+02| 0:0:00| chol  2↙
2
14|0.890|1.000|1.2e-10|1.3e-08|1.7e+02|-7.314820e+02 -9.050007e+02| 0:0:00| chol  2↙
2
15|1.000|0.999|2.7e-10|6.6e-09|5.6e+01|-8.368847e+02 -8.920645e+02| 0:0:00| chol  2↙
2
16|0.900|1.000|6.9e-12|3.3e-09|6.2e+00|-8.850936e+02 -8.911505e+02| 0:0:00| chol  2↙
2
17|1.000|0.813|8.7e-09|2.0e-09|2.4e+00|-8.886028e+02 -8.908923e+02| 0:0:00| chol  2↙
2
18|0.901|1.000|3.6e-09|8.3e-10|7.7e-01|-8.901927e+02 -8.909151e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|6.0e-10|4.1e-10|2.4e-01|-8.907086e+02 -8.909242e+02| 0:0:00| chol  2↙
2
20|0.980|0.979|1.7e-09|5.4e-11|5.1e-03|-8.909407e+02 -8.909428e+02| 0:0:00| chol  2↙
3
21|0.986|0.989|1.6e-10|6.9e-13|7.6e-05|-8.909455e+02 -8.909455e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.90945455e+02
 dual   objective value = -8.90945492e+02
 gap := trace(XZ)       = 7.61e-05
 relative gap           = 4.27e-08
 actual relative gap    = 2.10e-08
 rel. primal infeas     = 1.65e-10
 rel. dual   infeas     = 6.87e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.8e+05, 1.6e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.1e-10  0.0e+00  9.7e-13  0.0e+00  2.1e-08  4.3e-08
------------------------------------------------------------------

ans =

  890.9455

Epoch... 145
Epoch... 146
```

```
 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|4.1e+09| 1.341408e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.931|0.928|6.9e-02|8.1e-01|5.1e+08| 1.160068e+08  6.224741e+06| 0:0:00| chol  1↙
1
 2|0.645|0.639|2.4e-02|2.9e-01|2.6e+08| 9.208775e+07  5.858434e+06| 0:0:00| chol  1↙
1
 3|0.630|0.633|9.0e-03|1.1e-01|1.5e+08| 7.127513e+07  4.466952e+06| 0:0:00| chol  1↙
1
 4|0.748|0.747|2.3e-03|2.7e-02|7.4e+07| 4.690773e+07  1.866137e+06| 0:0:00| chol  1↙
2
 5|1.000|0.886|6.7e-10|3.1e-03|2.4e+07| 1.635151e+07  3.051880e+04| 0:0:00| chol  2↙
2
 6|0.986|0.953|2.4e-10|1.5e-04|1.5e+06| 1.069160e+06 -2.078893e+03| 0:0:00| chol  2↙
2
 7|0.805|0.850|7.0e-10|2.2e-05|4.2e+05| 3.460026e+05 -4.029146e+03| 0:0:00| chol  2↙
2
 8|0.980|1.000|6.1e-11|8.4e-07|1.3e+05| 1.166906e+05 -5.477423e+03| 0:0:00| chol  1↙
2
 9|1.000|0.971|4.5e-10|4.3e-07|2.8e+04| 2.363531e+04 -3.478938e+03| 0:0:00| chol  2↙
2
10|0.856|0.959|4.8e-10|2.2e-07|1.5e+04| 1.245768e+04 -2.545199e+03| 0:0:00| chol  2↙
2
11|1.000|0.272|1.3e-09|1.9e-07|1.0e+04| 8.478050e+03 -1.718247e+03| 0:0:00| chol  2↙
2
12|0.748|1.000|3.3e-10|5.3e-08|4.4e+03| 2.360772e+03 -2.018002e+03| 0:0:00| chol  2↙
2
13|0.930|0.980|8.1e-11|2.7e-08|1.5e+03| 4.386921e+02 -1.077079e+03| 0:0:00| chol  2↙
1
14|0.989|1.000|8.8e-11|1.3e-08|4.6e+02|-5.236359e+02 -9.803348e+02| 0:0:00| chol  2↙
2
15|1.000|1.000|1.2e-10|6.6e-09|1.4e+02|-8.033856e+02 -9.451601e+02| 0:0:00| chol  2↙
2
16|0.918|1.000|2.2e-10|3.3e-09|2.1e+01|-9.207042e+02 -9.410553e+02| 0:0:00| chol  2↙
2
17|1.000|0.883|1.5e-10|1.9e-09|5.0e+00|-9.352021e+02 -9.400811e+02| 0:0:00| chol  2↙
2
18|1.000|0.997|4.0e-09|8.6e-10|1.6e+00|-9.384844e+02 -9.400083e+02| 0:0:00| chol  2↙
2
19|0.916|1.000|2.6e-09|4.6e-10|2.2e-01|-9.398238e+02 -9.400223e+02| 0:0:00| chol  2↙
2
20|1.000|0.979|3.9e-09|8.1e-11|1.9e-02|-9.400254e+02 -9.400402e+02| 0:0:00| chol  1↙
1
21|0.982|0.989|2.7e-10|1.4e-12|3.6e-04|-9.400426e+02 -9.400429e+02| 0:0:00| chol  3↙
```

```
4
22|0.976|0.988|3.5e-10|3.1e-14|8.7e-06|-9.400429e+02 -9.400429e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.40042887e+02
 dual   objective value = -9.40042894e+02
 gap := trace(XZ)       = 8.72e-06
 relative gap           = 4.63e-09
 actual relative gap    = 3.98e-09
 rel. primal infeas     = 3.47e-10
 rel. dual   infeas     = 3.09e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.6e-10  0.0e+00  4.4e-14  0.0e+00  4.0e-09  4.6e-09
-----------------------------------------------------------------

ans =

  940.0429

Epoch... 147
Epoch... 148

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|3.3e+09| 1.071009e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.932|0.929|6.8e-02|8.0e-01|4.1e+08| 9.368912e+07  6.153355e+06| 0:0:00| chol  1↙
1
 2|0.635|0.630|2.5e-02|3.0e-01|2.2e+08| 7.449361e+07  5.798989e+06| 0:0:00| chol  1↙
1
 3|0.616|0.622|9.5e-03|1.1e-01|1.2e+08| 5.834668e+07  4.486938e+06| 0:0:00| chol  1↙
1
 4|0.722|0.735|2.6e-03|3.0e-02|6.3e+07| 3.952642e+07  2.003574e+06| 0:0:00| chol  1↙
1
 5|1.000|0.864|1.4e-09|4.0e-03|2.2e+07| 1.502879e+07  1.330918e+05| 0:0:00| chol  2↙
2
 6|0.986|0.947|3.6e-10|2.1e-04|1.5e+06| 1.021133e+06  3.829808e+03| 0:0:00| chol  2↙
2
 7|0.821|0.830|4.4e-10|3.6e-05|4.0e+05| 3.327512e+05 -2.082307e+03| 0:0:00| chol  2↙
2
 8|0.972|0.869|7.6e-11|4.9e-06|1.3e+05| 1.165399e+05 -4.449741e+03| 0:0:00| chol  2↙
```

```
2
 9|0.786|1.000|2.5e-10|4.2e-07|5.7e+04| 5.156378e+04 -3.778947e+03| 0:0:00| chol  1↙
1
10|1.000|1.000|1.0e-10|2.1e-07|2.0e+04| 1.732355e+04 -2.348777e+03| 0:0:00| chol  2↙
2
11|0.880|1.000|3.3e-10|1.1e-07|8.6e+03| 6.672303e+03 -1.847833e+03| 0:0:00| chol  2↙
2
12|1.000|0.947|5.0e-11|5.6e-08|3.1e+03| 1.933198e+03 -1.164902e+03| 0:0:00| chol  2↙
2
13|0.868|1.000|4.6e-11|2.6e-08|1.1e+03| 3.923423e+01 -1.088584e+03| 0:0:00| chol  2↙
1
14|1.000|0.987|4.6e-11|1.3e-08|3.9e+02|-5.805858e+02 -9.669541e+02| 0:0:00| chol  2↙
1
15|0.882|1.000|4.3e-11|6.6e-09|8.3e+01|-8.746007e+02 -9.568879e+02| 0:0:00| chol  2↙
2
16|1.000|0.961|6.4e-11|3.4e-09|2.5e+01|-9.265587e+02 -9.516650e+02| 0:0:00| chol  2↙
2
17|0.864|1.000|7.4e-10|1.7e-09|3.8e+00|-9.475340e+02 -9.512636e+02| 0:0:00| chol  2↙
2
18|1.000|0.755|9.1e-09|1.0e-09|1.6e+00|-9.496394e+02 -9.511539e+02| 0:0:00| chol  2↙
2
19|0.851|1.000|2.9e-11|4.4e-10|3.0e-01|-9.509016e+02 -9.511762e+02| 0:0:00| chol  2↙
2
20|1.000|0.910|5.4e-09|8.3e-11|9.2e-02|-9.511014e+02 -9.511885e+02| 0:0:00| chol  2↙
2
21|0.982|0.991|5.1e-10|3.7e-12|1.8e-03|-9.511908e+02 -9.511924e+02| 0:0:00| chol  5↙
4
22|0.986|0.988|5.7e-09|8.6e-14|2.8e-05|-9.511924e+02 -9.511924e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.51192414e+02
 dual   objective value = -9.51192431e+02
 gap := trace(XZ)       = 2.76e-05
 relative gap           = 1.45e-08
 actual relative gap    = 8.76e-09
 rel. primal infeas     = 5.70e-09
 rel. dual   infeas     = 8.61e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 9.9e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 8.1e-09  0.0e+00  1.2e-13  0.0e+00  8.8e-09  1.4e-08
-----------------------------------------------------------------

ans =

  951.1924

Epoch... 149
Epoch... 150

 num. of constraints = 33
```

```
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.9e+09| 1.272085e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.934|0.931|6.6e-02|7.7e-01|4.8e+08| 1.103233e+08  5.952568e+06| 0:0:00| chol  1↙
1
 2|0.645|0.640|2.4e-02|2.8e-01|2.5e+08| 8.691347e+07  5.585368e+06| 0:0:00| chol  1↙
2
 3|0.630|0.633|8.7e-03|1.0e-01|1.4e+08| 6.705454e+07  4.243165e+06| 0:0:00| chol  1↙
1
 4|0.749|0.749|2.2e-03|2.5e-02|6.9e+07| 4.397872e+07  1.752707e+06| 0:0:00| chol  1↙
2
 5|1.000|0.888|7.2e-10|2.9e-03|2.2e+07| 1.516570e+07  2.558475e+04| 0:0:00| chol  2↙
2
 6|0.985|0.952|6.8e-10|1.4e-04|1.4e+06| 1.004714e+06 -2.124021e+03| 0:0:00| chol  2↙
2
 7|0.795|0.852|4.2e-10|2.1e-05|4.2e+05| 3.527664e+05 -4.152783e+03| 0:0:00| chol  2↙
2
 8|1.000|1.000|3.7e-11|8.4e-07|1.2e+05| 1.071400e+05 -5.559784e+03| 0:0:00| chol  1↙
1
 9|0.887|0.775|3.6e-10|5.2e-07|2.8e+04| 2.406794e+04 -3.605350e+03| 0:0:00| chol  1↙
2
10|0.768|1.000|3.1e-10|2.1e-07|1.7e+04| 1.485080e+04 -2.228791e+03| 0:0:00| chol  1↙
2
11|1.000|0.969|2.6e-10|1.1e-07|6.6e+03| 5.077609e+03 -1.429622e+03| 0:0:00| chol  2↙
2
12|0.874|1.000|8.2e-11|5.3e-08|2.7e+03| 1.413683e+03 -1.322871e+03| 0:0:00| chol  2↙
2
13|1.000|0.962|7.2e-11|2.7e-08|9.9e+02|-2.793948e+01 -1.017271e+03| 0:0:00| chol  2↙
2
14|0.887|1.000|5.0e-11|1.3e-08|2.8e+02|-7.116541e+02 -9.880198e+02| 0:0:00| chol  2↙
2
15|1.000|0.991|1.4e-10|6.7e-09|9.1e+01|-8.738572e+02 -9.642807e+02| 0:0:00| chol  2↙
2
16|0.903|1.000|2.7e-10|3.3e-09|1.1e+01|-9.521868e+02 -9.625604e+02| 0:0:00| chol  2↙
2
17|1.000|0.847|1.4e-09|1.9e-09|3.6e+00|-9.585910e+02 -9.620429e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|3.2e-10|8.6e-10|1.1e+00|-9.609729e+02 -9.620170e+02| 0:0:00| chol  2↙
2
19|0.941|1.000|3.0e-09|4.6e-10|1.4e-01|-9.619209e+02 -9.620312e+02| 0:0:00| chol  2↙
1
20|0.987|0.981|1.7e-09|1.8e-11|5.7e-03|-9.620484e+02 -9.620530e+02| 0:0:00| chol  2↙
2
21|0.987|0.989|6.1e-10|3.3e-13|8.2e-05|-9.620534e+02 -9.620534e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
```

```
 number of iterations   = 21
 primal objective value = -9.62053351e+02
 dual   objective value = -9.62053414e+02
 gap := trace(XZ)       = 8.20e-05
 relative gap           = 4.26e-08
 actual relative gap    = 3.30e-08
 rel. primal infeas     = 6.10e-10
 rel. dual   infeas     = 3.27e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 8.0e-10  0.0e+00  4.6e-13  0.0e+00  3.3e-08  4.3e-08
------------------------------------------------------------------

ans =

  962.0534

Epoch... 151
Epoch... 152

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|4.6e+09| 1.522585e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.6e-01|5.7e+08| 1.310074e+08  5.858144e+06| 0:0:00| chol  1↙
1
 2|0.657|0.650|2.3e-02|2.6e-01|2.9e+08| 1.025786e+08  5.477781e+06| 0:0:00| chol  1↙
1
 3|0.646|0.646|8.0e-03|9.4e-02|1.6e+08| 7.794424e+07  4.083313e+06| 0:0:00| chol  1↙
1
 4|0.780|0.763|1.8e-03|2.2e-02|8.4e+07| 4.926546e+07  1.541032e+06| 0:0:00| chol  2↙
2
 5|1.000|0.917|5.4e-10|1.8e-03|2.5e+07| 1.680447e+07 -8.197122e+04| 0:0:00| chol  2↙
2
 6|0.986|0.958|3.1e-10|7.7e-05|1.6e+06| 1.108338e+06 -6.991105e+03| 0:0:00| chol  2↙
2
 7|0.861|0.917|3.4e-10|6.8e-06|4.2e+05| 3.551009e+05 -6.246945e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.5e-11|8.4e-07|6.3e+04| 5.465769e+04 -5.433637e+03| 0:0:00| chol  1↙
2
 9|0.761|0.758|2.9e-10|5.2e-07|2.9e+04| 2.484525e+04 -3.139826e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|8.6e-11|2.1e-07|1.3e+04| 1.107243e+04 -2.035011e+03| 0:0:00| chol  2↙
```

```
2
11|1.000|0.989|1.6e-10|1.1e-07|4.0e+03| 2.718008e+03 -1.267206e+03| 0:0:00| chol  2↙
1
12|0.871|1.000|6.7e-11|5.3e-08|1.7e+03| 5.099048e+02 -1.180904e+03| 0:0:00| chol  2↙
2
13|1.000|0.989|6.0e-11|2.7e-08|6.0e+02|-4.002344e+02 -9.937139e+02| 0:0:00| chol  1↙
1
14|0.888|1.000|2.0e-10|1.3e-08|1.5e+02|-8.321710e+02 -9.766852e+02| 0:0:00| chol  2↙
2
15|1.000|0.993|2.5e-10|6.7e-09|4.6e+01|-9.210536e+02 -9.664478e+02| 0:0:00| chol  2↙
2
16|0.878|1.000|2.5e-10|3.3e-09|6.2e+00|-9.596325e+02 -9.656684e+02| 0:0:00| chol  2↙
2
17|1.000|0.777|4.3e-09|2.1e-09|2.6e+00|-9.629959e+02 -9.654312e+02| 0:0:00| chol  2↙
2
18|0.816|1.000|3.9e-09|8.8e-10|6.8e-01|-9.648364e+02 -9.654660e+02| 0:0:00| chol  2↙
2
19|1.000|0.944|5.6e-09|5.3e-10|2.2e-01|-9.652752e+02 -9.654685e+02| 0:0:00| chol  2↙
2
20|0.970|0.984|4.5e-11|6.1e-11|7.5e-03|-9.654854e+02 -9.654895e+02| 0:0:00| chol  2↙
2
21|0.980|0.989|2.7e-09|9.0e-13|1.6e-04|-9.654920e+02 -9.654921e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.65491980e+02
 dual   objective value = -9.65492084e+02
 gap := trace(XZ)       = 1.56e-04
 relative gap           = 8.07e-08
 actual relative gap    = 5.35e-08
 rel. primal infeas     = 2.69e-09
 rel. dual   infeas     = 8.98e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.4e-09  0.0e+00  1.3e-12  0.0e+00  5.4e-08  8.1e-08
-------------------------------------------------------------------

ans =

  965.4921

Epoch... 153
Epoch... 154

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.7e+09| 1.909326e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.933|0.930|6.7e-02|7.7e-01|7.1e+08| 1.629361e+08  5.955740e+06| 0:0:00| chol  1↙
1
 2|0.670|0.663|2.2e-02|2.6e-01|3.5e+08| 1.269604e+08  5.550119e+06| 0:0:00| chol  1↙
1
 3|0.665|0.660|7.3e-03|8.8e-02|1.9e+08| 9.471761e+07  4.044796e+06| 0:0:00| chol  1↙
2
 4|0.818|0.780|1.3e-03|1.9e-02|9.7e+07| 5.697954e+07  1.349006e+06| 0:0:00| chol  1↙
1
 5|1.000|0.934|3.4e-10|1.3e-03|2.3e+07| 1.521837e+07 -1.050665e+05| 0:0:00| chol  2↙
2
 6|0.984|0.959|3.0e-10|5.3e-05|1.5e+06| 1.042387e+06 -8.106781e+03| 0:0:00| chol  2↙
2
 7|0.887|0.985|2.2e-09|2.0e-06|4.0e+05| 3.510172e+05 -7.044358e+03| 0:0:00| chol  1↙
1
 8|0.990|0.965|3.6e-11|8.8e-07|2.5e+04| 1.875745e+04 -5.106696e+03| 0:0:00| chol  2↙
2
 9|0.301|1.000|7.1e-11|4.2e-07|2.0e+04| 1.577301e+04 -4.151696e+03| 0:0:00| chol  1↙
1
10|0.982|0.769|1.4e-10|2.6e-07|9.4e+03| 7.443064e+03 -1.820203e+03| 0:0:00| chol  1↙
2
11|1.000|0.991|9.2e-11|1.1e-07|3.5e+03| 2.304267e+03 -1.188585e+03| 0:0:00| chol  2↙
2
12|0.877|1.000|3.6e-11|5.3e-08|1.4e+03| 2.523158e+02 -1.126758e+03| 0:0:00| chol  2↙
2
13|1.000|0.989|3.5e-11|2.7e-08|4.8e+02|-4.986790e+02 -9.724433e+02| 0:0:00| chol  2↙
2
14|0.887|1.000|1.5e-11|1.3e-08|1.1e+02|-8.524406e+02 -9.590619e+02| 0:0:00| chol  1↙
2
15|1.000|0.985|3.3e-10|6.7e-09|3.3e+01|-9.194900e+02 -9.521805e+02| 0:0:00| chol  1↙
2
16|0.856|1.000|1.1e-10|3.3e-09|5.4e+00|-9.464411e+02 -9.516593e+02| 0:0:00| chol  2↙
2
17|1.000|0.747|1.1e-08|2.1e-09|2.3e+00|-9.493471e+02 -9.514860e+02| 0:0:00| chol  2↙
2
18|0.833|1.000|3.9e-09|8.3e-10|4.9e-01|-9.510896e+02 -9.515366e+02| 0:0:00| chol  2↙
3
19|1.000|0.792|5.7e-09|5.1e-10|1.9e-01|-9.513815e+02 -9.515376e+02| 0:0:00| chol  2↙
2
20|0.973|0.982|2.4e-09|1.9e-11|5.7e-03|-9.515597e+02 -9.515643e+02| 0:0:00| chol  2↙
3
21|0.987|0.988|1.5e-10|3.5e-13|8.0e-05|-9.515648e+02 -9.515648e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------

 number of iterations   = 21
 primal objective value = -9.51564751e+02
 dual   objective value = -9.51564811e+02
 gap := trace(XZ)       = 7.99e-05
 relative gap           = 4.19e-08
 actual relative gap    = 3.16e-08
```

```
 rel. primal infeas     = 1.49e-10
 rel. dual   infeas     = 3.55e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.5e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.9e-10  0.0e+00  5.0e-13  0.0e+00  3.2e-08  4.2e-08
------------------------------------------------------------------

ans =

  951.5648

Epoch... 155
Epoch... 156

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.8e+09| 1.956095e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.933|0.930|6.7e-02|7.7e-01|7.2e+08| 1.667999e+08  5.976266e+06| 0:0:00| chol  1↙
2
 2|0.672|0.664|2.2e-02|2.6e-01|3.6e+08| 1.299013e+08  5.566058e+06| 0:0:00| chol  1↙
1
 3|0.667|0.661|7.3e-03|8.8e-02|2.0e+08| 9.671255e+07  4.046179e+06| 0:0:00| chol  1↙
2
 4|0.823|0.781|1.3e-03|1.9e-02|9.8e+07| 5.784712e+07  1.330185e+06| 0:0:00| chol  2↙
2
 5|1.000|0.936|3.2e-10|1.2e-03|2.2e+07| 1.487691e+07 -1.029880e+05| 0:0:00| chol  2↙
2
 6|0.984|0.958|5.3e-10|5.2e-05|1.5e+06| 1.032028e+06 -8.181146e+03| 0:0:00| chol  2↙
2
 7|0.880|0.988|7.2e-10|1.9e-06|4.1e+05| 3.593097e+05 -7.084197e+03| 0:0:00| chol  1↙
1
 8|0.989|0.977|4.0e-11|8.7e-07|2.6e+04| 1.908243e+04 -5.100873e+03| 0:0:00| chol  1↙
2
 9|0.298|1.000|5.3e-11|4.2e-07|2.1e+04| 1.597062e+04 -4.388600e+03| 0:0:00| chol  1↙
1
10|0.968|0.759|9.7e-11|2.6e-07|9.7e+03| 7.662956e+03 -1.852999e+03| 0:0:00| chol  2↙
2
11|1.000|0.967|8.8e-11|1.1e-07|3.7e+03| 2.483778e+03 -1.193731e+03| 0:0:00| chol  1↙
2
12|0.878|1.000|2.4e-10|5.3e-08|1.5e+03| 3.327970e+02 -1.124454e+03| 0:0:00| chol  1↙
2
13|1.000|0.989|4.1e-11|2.7e-08|5.0e+02|-4.620788e+02 -9.624177e+02| 0:0:00| chol  2↙
```

```
2
14|0.888|1.000|1.1e-10|1.3e-08|1.2e+02|-8.331592e+02 -9.482633e+02| 0:0:00| chol  2↙
2
15|1.000|0.988|1.4e-10|6.7e-09|3.6e+01|-9.051227e+02 -9.406194e+02| 0:0:00| chol  2↙
2
16|0.854|1.000|3.6e-10|3.3e-09|5.9e+00|-9.342766e+02 -9.400053e+02| 0:0:00| chol  2↙
2
17|1.000|0.744|5.6e-09|2.1e-09|2.5e+00|-9.374210e+02 -9.397920e+02| 0:0:00| chol  2↙
2
18|0.830|1.000|3.3e-09|8.7e-10|5.8e-01|-9.393125e+02 -9.398385e+02| 0:0:00| chol  2↙
2
19|1.000|0.851|8.3e-09|5.4e-10|2.0e-01|-9.396633e+02 -9.398356e+02| 0:0:00| chol  2↙
2
20|0.981|0.970|2.5e-10|6.3e-11|4.7e-03|-9.398571e+02 -9.398582e+02| 0:0:00| chol  2↙
2
21|0.981|0.990|2.0e-09|8.0e-13|9.3e-05|-9.398612e+02 -9.398613e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.39861239e+02
 dual   objective value = -9.39861282e+02
 gap := trace(XZ)       = 9.30e-05
 relative gap           = 4.94e-08
 actual relative gap    = 2.27e-08
 rel. primal infeas     = 1.98e-09
 rel. dual   infeas     = 7.99e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.5e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.5e-09  0.0e+00  1.1e-12  0.0e+00  2.3e-08  4.9e-08
-----------------------------------------------------------------

ans =

  939.8613

Epoch... 157
Epoch... 158

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|5.2e+09| 1.724016e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.7e-01|6.4e+08| 1.476402e+08  5.957941e+06| 0:0:00| chol  1↙
```

```
1
 2|0.664|0.656|2.2e-02|2.6e-01|3.2e+08| 1.153286e+08  5.560377e+06| 0:0:00| chol  1↙
2
 3|0.655|0.653|7.7e-03|9.1e-02|1.8e+08| 8.685405e+07  4.099763e+06| 0:0:00| chol  1↙
2
 4|0.798|0.771|1.6e-03|2.1e-02|9.1e+07| 5.363150e+07  1.461355e+06| 0:0:00| chol  2↙
2
 5|1.000|0.926|3.8e-10|1.5e-03|2.5e+07| 1.655858e+07 -1.026026e+05| 0:0:00| chol  2↙
1
 6|0.985|0.957|6.2e-10|6.6e-05|1.6e+06| 1.101414e+06 -7.933552e+03| 0:0:00| chol  2↙
2
 7|0.866|0.941|3.5e-10|4.5e-06|4.2e+05| 3.622952e+05 -6.602342e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.2e-11|8.4e-07|3.9e+04| 3.175969e+04 -5.187769e+03| 0:0:00| chol  2↙
2
 9|0.512|1.000|2.0e-10|4.2e-07|2.6e+04| 2.235262e+04 -2.809341e+03| 0:0:00| chol  2↙
1
10|1.000|0.962|1.0e-10|2.2e-07|1.0e+04| 8.204786e+03 -1.658481e+03| 0:0:00| chol  1↙
2
11|1.000|1.000|2.8e-10|1.1e-07|4.0e+03| 2.622774e+03 -1.376356e+03| 0:0:00| chol  2↙
2
12|1.000|0.953|1.0e-10|5.5e-08|1.2e+03| 1.864189e+02 -1.029903e+03| 0:0:00| chol  2↙
2
13|0.856|1.000|7.1e-11|2.6e-08|4.4e+02|-5.555196e+02 -9.921054e+02| 0:0:00| chol  2↙
1
14|1.000|1.000|1.7e-10|1.3e-08|1.6e+02|-7.965248e+02 -9.509516e+02| 0:0:00| chol  2↙
1
15|0.895|1.000|6.7e-11|6.6e-09|2.2e+01|-9.263052e+02 -9.476516e+02| 0:0:00| chol  2↙
2
16|1.000|0.866|3.8e-10|3.8e-09|6.8e+00|-9.399456e+02 -9.464962e+02| 0:0:00| chol  2↙
2
17|1.000|1.000|1.9e-09|1.7e-09|2.1e+00|-9.444413e+02 -9.463981e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|1.5e-09|8.5e-10|4.1e-01|-9.460501e+02 -9.464091e+02| 0:0:00| chol  2↙
2
19|1.000|0.983|1.9e-09|4.6e-10|7.4e-02|-9.463759e+02 -9.464234e+02| 0:0:00| chol  2↙
2
20|0.979|0.971|3.3e-09|1.7e-11|2.0e-03|-9.464451e+02 -9.464462e+02| 0:0:00| chol  2↙
3
21|0.975|0.989|3.2e-09|2.6e-13|5.2e-05|-9.464468e+02 -9.464469e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.46446821e+02
 dual   objective value = -9.46446861e+02
 gap := trace(XZ)       = 5.18e-05
 relative gap           = 2.74e-08
 actual relative gap    = 2.11e-08
 rel. primal infeas     = 3.24e-09
 rel. dual   infeas     = 2.64e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
```

```
 termination code       =  0
 DIMACS errors: 4.1e-09  0.0e+00  3.7e-13  0.0e+00  2.1e-08  2.7e-08
------------------------------------------------------------------

ans =

  946.4469

Epoch... 159
Epoch... 160

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.1e+09| 1.690887e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.7e-01|6.3e+08| 1.448973e+08  5.942925e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.2e-02|2.6e-01|3.2e+08| 1.132362e+08  5.546605e+06| 0:0:00| chol  1↙
2
 3|0.654|0.652|7.7e-03|9.2e-02|1.7e+08| 8.539604e+07  4.094717e+06| 0:0:00| chol  1↙
1
 4|0.796|0.770|1.6e-03|2.1e-02|9.0e+07| 5.290863e+07  1.470569e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.8e-10|1.6e-03|2.5e+07| 1.658498e+07 -1.004656e+05| 0:0:00| chol  2↙
2
 6|0.985|0.957|1.4e-09|6.8e-05|1.6e+06| 1.103808e+06 -8.065026e+03| 0:0:00| chol  2↙
2
 7|0.864|0.937|3.9e-10|4.9e-06|4.2e+05| 3.607267e+05 -6.609147e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.2e-11|8.4e-07|4.2e+04| 3.521490e+04 -5.241011e+03| 0:0:00| chol  1↙
2
 9|0.557|1.000|2.2e-10|4.2e-07|2.7e+04| 2.346116e+04 -2.687440e+03| 0:0:00| chol  2↙
2
10|0.843|1.000|1.3e-10|2.1e-07|1.3e+04| 1.067996e+04 -1.955387e+03| 0:0:00| chol  2↙
2
11|1.000|0.994|1.8e-10|1.1e-07|4.5e+03| 3.251862e+03 -1.255899e+03| 0:0:00| chol  1↙
2
12|0.829|1.000|1.7e-10|5.3e-08|1.8e+03| 6.394641e+02 -1.201479e+03| 0:0:00| chol  2↙
2
13|1.000|0.971|8.0e-11|2.7e-08|6.5e+02|-3.444948e+02 -9.932935e+02| 0:0:00| chol  2↙
2
14|0.878|1.000|1.7e-10|1.3e-08|1.6e+02|-8.180534e+02 -9.747855e+02| 0:0:00| chol  2↙
2
15|1.000|0.973|3.7e-10|6.8e-09|5.0e+01|-9.133364e+02 -9.632750e+02| 0:0:00| chol  2↙
2
16|0.868|1.000|3.2e-10|3.3e-09|7.5e+00|-9.550093e+02 -9.623111e+02| 0:0:00| chol  2↙
```

```
2
17|1.000|0.749|2.9e-09|2.1e-09|3.1e+00|-9.589232e+02 -9.619488e+02| 0:0:00| chol  2↙
2
18|0.807|1.000|1.3e-10|9.0e-10|8.6e-01|-9.611642e+02 -9.619757e+02| 0:0:00| chol  2↙
2
19|1.000|0.910|7.2e-09|4.8e-10|2.9e-01|-9.616945e+02 -9.619559e+02| 0:0:00| chol  2↙
2
20|0.935|0.944|1.1e-09|1.0e-10|2.2e-02|-9.619584e+02 -9.619749e+02| 0:0:00| chol  2↙
2
21|0.959|0.948|2.4e-09|7.3e-12|1.2e-03|-9.619773e+02 -9.619781e+02| 0:0:00| chol  4↙
4
22|0.992|0.959|7.6e-10|6.9e-13|2.4e-04|-9.619781e+02 -9.619783e+02| 0:0:00| chol  9↙
23
23|0.755|0.987|2.2e-10|1.0e-13|5.8e-05|-9.619783e+02 -9.619783e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.61978272e+02
 dual   objective value = -9.61978346e+02
 gap := trace(XZ)       = 5.76e-05
 relative gap           = 2.99e-08
 actual relative gap    = 3.81e-08
 rel. primal infeas     = 2.24e-10
 rel. dual   infeas     = 1.01e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.9e-10  0.0e+00  1.4e-13  0.0e+00  3.8e-08  3.0e-08
-----------------------------------------------------------------

ans =

  961.9783

Epoch... 161
Epoch... 162

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|5.1e+09| 1.683279e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.6e-01|6.3e+08| 1.442713e+08  5.931870e+06| 0:0:00| chol  1↙
1
 2|0.662|0.655|2.2e-02|2.6e-01|3.2e+08| 1.126952e+08  5.535296e+06| 0:0:00| chol  1↙
```

```
1
 3|0.654|0.652|7.7e-03|9.2e-02|1.7e+08| 8.498780e+07  4.086398e+06| 0:0:00| chol  1↙
1
 4|0.795|0.770|1.6e-03|2.1e-02|9.0e+07| 5.267167e+07  1.468457e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.8e-10|1.6e-03|2.4e+07| 1.653611e+07 -9.977998e+04| 0:0:00| chol  2↙
2
 6|0.985|0.957|9.8e-10|6.9e-05|1.6e+06| 1.101220e+06 -8.049748e+03| 0:0:00| chol  2↙
2
 7|0.862|0.936|3.6e-10|4.9e-06|4.2e+05| 3.618727e+05 -6.605065e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.6e-11|8.4e-07|4.3e+04| 3.556512e+04 -5.249249e+03| 0:0:00| chol  1↙
2
 9|0.561|1.000|2.2e-10|4.2e-07|2.7e+04| 2.355785e+04 -2.675145e+03| 0:0:00| chol  1↙
2
10|0.795|1.000|1.3e-10|2.1e-07|1.4e+04| 1.140974e+04 -2.033273e+03| 0:0:00| chol  2↙
2
11|1.000|0.984|1.7e-10|1.1e-07|4.7e+03| 3.415627e+03 -1.273922e+03| 0:0:00| chol  2↙
2
12|0.838|1.000|3.7e-11|5.3e-08|1.9e+03| 6.956956e+02 -1.207041e+03| 0:0:00| chol  2↙
2
13|1.000|0.975|7.8e-11|2.7e-08|6.7e+02|-3.313720e+02 -9.945513e+02| 0:0:00| chol  2↙
1
14|0.882|1.000|1.7e-11|1.3e-08|1.6e+02|-8.123385e+02 -9.756007e+02| 0:0:00| chol  2↙
2
15|1.000|0.982|3.5e-11|6.7e-09|5.2e+01|-9.115424e+02 -9.634844e+02| 0:0:00| chol  1↙
2
16|0.867|1.000|9.7e-10|3.3e-09|7.9e+00|-9.547778e+02 -9.624408e+02| 0:0:00| chol  2↙
2
17|1.000|0.747|4.8e-09|2.1e-09|3.3e+00|-9.588216e+02 -9.620430e+02| 0:0:00| chol  2↙
2
18|0.794|1.000|2.6e-09|8.4e-10|9.8e-01|-9.611401e+02 -9.620705e+02| 0:0:00| chol  2↙
3
19|1.000|0.865|1.5e-09|4.9e-10|3.7e-01|-9.616980e+02 -9.620364e+02| 0:0:00| chol  2↙
2
20|0.955|0.959|2.9e-10|8.6e-11|1.8e-02|-9.620422e+02 -9.620558e+02| 0:0:00| chol  2↙
2
21|0.985|0.967|1.5e-09|3.4e-12|3.4e-04|-9.620585e+02 -9.620587e+02| 0:0:00| chol  3↙
3
22|0.980|0.982|1.1e-10|7.4e-14|7.5e-06|-9.620588e+02 -9.620588e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.62058752e+02
 dual   objective value = -9.62058755e+02
 gap := trace(XZ)       = 7.50e-06
 relative gap           = 3.89e-09
 actual relative gap    = 1.30e-09
 rel. primal infeas     = 1.08e-10
 rel. dual   infeas     = 7.37e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
```

```
 termination code       =  0
 DIMACS errors: 1.4e-10  0.0e+00  1.0e-13  0.0e+00  1.3e-09  3.9e-09
------------------------------------------------------------------

ans =

  962.0588

Epoch... 163
Epoch... 164

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.1e+09| 1.678995e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.6e-01|6.2e+08| 1.439178e+08  5.923908e+06| 0:0:00| chol  1↙
2
 2|0.662|0.655|2.2e-02|2.6e-01|3.2e+08| 1.123831e+08  5.527037e+06| 0:0:00| chol  1↙
1
 3|0.654|0.652|7.7e-03|9.2e-02|1.7e+08| 8.474693e+07  4.079747e+06| 0:0:00| chol  1↙
1
 4|0.795|0.770|1.6e-03|2.1e-02|9.0e+07| 5.252128e+07  1.465663e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.9e-10|1.6e-03|2.4e+07| 1.648688e+07 -9.934683e+04| 0:0:00| chol  2↙
2
 6|0.985|0.957|5.5e-10|6.9e-05|1.6e+06| 1.098355e+06 -7.997135e+03| 0:0:00| chol  2↙
2
 7|0.861|0.936|3.5e-10|5.0e-06|4.3e+05| 3.632876e+05 -6.587587e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|3.8e-11|8.4e-07|4.3e+04| 3.555071e+04 -5.249963e+03| 0:0:00| chol  2↙
2
 9|0.563|1.000|2.2e-10|4.2e-07|2.7e+04| 2.350683e+04 -2.663926e+03| 0:0:00| chol  1↙
2
10|0.759|1.000|1.2e-10|2.1e-07|1.4e+04| 1.189143e+04 -2.091049e+03| 0:0:00| chol  2↙
2
11|1.000|0.976|1.6e-10|1.1e-07|4.8e+03| 3.509740e+03 -1.288211e+03| 0:0:00| chol  2↙
2
12|0.846|1.000|2.7e-11|5.3e-08|1.9e+03| 7.244460e+02 -1.211550e+03| 0:0:00| chol  2↙
2
13|1.000|0.978|1.1e-10|2.7e-08|6.7e+02|-3.275015e+02 -9.974576e+02| 0:0:00| chol  2↙
1
14|0.885|1.000|7.9e-11|1.3e-08|1.7e+02|-8.114863e+02 -9.783277e+02| 0:0:00| chol  2↙
2
15|1.000|0.987|2.8e-10|6.7e-09|5.3e+01|-9.128256e+02 -9.658713e+02| 0:0:00| chol  2↙
2
16|0.868|1.000|1.3e-10|3.3e-09|8.0e+00|-9.570327e+02 -9.647943e+02| 0:0:00| chol  2↙
```

```
2
17|1.000|0.749|5.7e-09|2.1e-09|3.4e+00|-9.611316e+02 -9.643893e+02| 0:0:00| chol  2↙
2
18|0.795|1.000|3.9e-10|8.6e-10|9.9e-01|-9.634721e+02 -9.644139e+02| 0:0:00| chol  2↙
2
19|1.000|0.903|3.7e-09|5.2e-10|3.5e-01|-9.640559e+02 -9.643810e+02| 0:0:00| chol  2↙
2
20|0.973|0.957|8.3e-10|7.9e-11|1.1e-02|-9.643929e+02 -9.643995e+02| 0:0:00| chol  2↙
3
21|0.983|0.982|7.1e-10|1.8e-12|2.1e-04|-9.644025e+02 -9.644026e+02| 0:0:00| chol  6↙
19
  stop: primal infeas has deteriorated too much, 7.9e-06
22|0.761|0.981|7.1e-10|1.8e-12|2.1e-04|-9.644025e+02 -9.644026e+02| 0:0:00|
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.64402453e+02
 dual   objective value = -9.64402560e+02
 gap := trace(XZ)       = 2.05e-04
 relative gap           = 1.06e-07
 actual relative gap    = 5.52e-08
 rel. primal infeas     = 7.11e-10
 rel. dual   infeas     = 1.76e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       = -7
 DIMACS errors: 9.1e-10  0.0e+00  2.5e-12  0.0e+00  5.5e-08  1.1e-07
-----------------------------------------------------------------

ans =

  964.4026

Epoch... 165
Epoch... 166

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|5.0e+09| 1.658203e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.5e-01|6.1e+08| 1.422131e+08  5.852672e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.2e-02|2.6e-01|3.1e+08| 1.108792e+08  5.457721e+06| 0:0:00| chol  1↙
1
 3|0.654|0.652|7.7e-03|9.0e-02|1.7e+08| 8.356018e+07  4.026599e+06| 0:0:00| chol  1↙
```

```
2
 4|0.796|0.770|1.6e-03|2.1e-02|8.8e+07| 5.175646e+07  1.444587e+06| 0:0:00| chol  2↙
2
 5|1.000|0.925|3.9e-10|1.6e-03|2.4e+07| 1.621738e+07 -9.763231e+04| 0:0:00| chol  2↙
2
 6|0.985|0.957|1.9e-09|6.8e-05|1.6e+06| 1.082725e+06 -7.867696e+03| 0:0:00| chol  2↙
2
 7|0.858|0.938|4.6e-10|4.8e-06|4.3e+05| 3.640073e+05 -6.566192e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.7e-11|8.4e-07|4.1e+04| 3.423755e+04 -5.214803e+03| 0:0:00| chol  2↙
2
 9|0.551|1.000|2.2e-10|4.2e-07|2.6e+04| 2.303240e+04 -2.669946e+03| 0:0:00| chol  1↙
1
10|0.871|1.000|1.3e-10|2.1e-07|1.2e+04| 1.008665e+04 -1.883205e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.8e-10|1.1e-07|4.4e+03| 3.089520e+03 -1.230773e+03| 0:0:00| chol  2↙
2
12|0.833|1.000|5.6e-11|5.3e-08|1.7e+03| 5.591288e+02 -1.175708e+03| 0:0:00| chol  2↙
2
13|1.000|0.972|1.8e-10|2.7e-08|6.1e+02|-3.705169e+02 -9.798532e+02| 0:0:00| chol  2↙
2
14|0.877|1.000|1.2e-10|1.3e-08|1.5e+02|-8.180095e+02 -9.625776e+02| 0:0:00| chol  1↙
1
15|1.000|0.970|3.3e-10|6.8e-09|4.6e+01|-9.061832e+02 -9.520645e+02| 0:0:00| chol  2↙
2
16|0.853|1.000|2.3e-10|3.3e-09|7.7e+00|-9.435737e+02 -9.511197e+02| 0:0:00| chol  2↙
2
17|1.000|0.745|4.6e-09|2.1e-09|3.3e+00|-9.475709e+02 -9.507346e+02| 0:0:00| chol  2↙
2
18|0.814|1.000|2.0e-09|8.9e-10|8.8e-01|-9.499374e+02 -9.507643e+02| 0:0:00| chol  2↙
2
19|1.000|0.912|5.8e-09|5.6e-10|3.0e-01|-9.504671e+02 -9.507358e+02| 0:0:00| chol  2↙
2
20|0.982|0.979|5.2e-10|6.2e-11|6.0e-03|-9.507526e+02 -9.507551e+02| 0:0:00| chol  2↙
3
21|0.975|0.982|7.3e-10|1.3e-12|1.6e-04|-9.507577e+02 -9.507578e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.50757694e+02
 dual   objective value = -9.50757776e+02
 gap := trace(XZ)       = 1.59e-04
 relative gap           = 8.37e-08
 actual relative gap    = 4.29e-08
 rel. primal infeas     = 7.27e-10
 rel. dual   infeas     = 1.35e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 9.4e-10  0.0e+00  1.9e-12  0.0e+00  4.3e-08  8.4e-08
-----------------------------------------------------------------
```

```
ans =

  950.7578

Epoch... 167
Epoch... 168

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|5.2e+09| 1.720804e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.5e-01|6.4e+08| 1.473824e+08  5.808284e+06| 0:0:00| chol  1↙
1
 2|0.666|0.658|2.2e-02|2.5e-01|3.2e+08| 1.146740e+08  5.409925e+06| 0:0:00| chol  1↙
2
 3|0.658|0.655|7.5e-03|8.8e-02|1.7e+08| 8.604098e+07  3.969345e+06| 0:0:00| chol  1↙
1
 4|0.804|0.774|1.5e-03|2.0e-02|9.0e+07| 5.268983e+07  1.383331e+06| 0:0:00| chol  1↙
2
 5|1.000|0.929|3.8e-10|1.4e-03|2.3e+07| 1.561436e+07 -1.007263e+05| 0:0:00| chol  2↙
2
 6|0.984|0.957|2.5e-09|6.2e-05|1.5e+06| 1.054483e+06 -8.102174e+03| 0:0:00| chol  2↙
2
 7|0.861|0.954|8.7e-10|3.5e-06|4.2e+05| 3.651221e+05 -6.820148e+03| 0:0:00| chol  1↙
1
 8|1.000|0.992|3.2e-11|8.5e-07|3.0e+04| 2.366253e+04 -5.148664e+03| 0:0:00| chol  2↙
2
 9|0.297|1.000|8.4e-11|4.2e-07|2.5e+04| 1.961669e+04 -4.621048e+03| 0:0:00| chol  1↙
1
10|0.974|0.746|9.7e-11|2.6e-07|1.1e+04| 8.880536e+03 -1.998729e+03| 0:0:00| chol  1↙
2
11|1.000|0.949|1.1e-10|1.1e-07|4.5e+03| 3.233641e+03 -1.257766e+03| 0:0:00| chol  2↙
1
12|0.855|1.000|6.9e-11|5.3e-08|1.9e+03| 6.651389e+02 -1.181790e+03| 0:0:00| chol  2↙
1
13|1.000|0.983|1.1e-10|2.7e-08|6.4e+02|-3.375587e+02 -9.777821e+02| 0:0:00| chol  2↙
2
14|0.889|1.000|7.9e-11|1.3e-08|1.6e+02|-8.022778e+02 -9.594469e+02| 0:0:00| chol  2↙
2
15|1.000|0.992|4.7e-10|6.7e-09|5.0e+01|-8.984089e+02 -9.479642e+02| 0:0:00| chol  2↙
1
16|0.857|1.000|6.9e-10|3.3e-09|8.1e+00|-9.390341e+02 -9.469240e+02| 0:0:00| chol  2↙
2
17|1.000|0.740|6.8e-09|2.1e-09|3.5e+00|-9.431713e+02 -9.465217e+02| 0:0:00| chol  2↙
2
18|0.806|1.000|1.8e-09|8.8e-10|9.8e-01|-9.456246e+02 -9.465509e+02| 0:0:00| chol  2↙
```

```
2
19|1.000|0.879|1.8e-09|5.5e-10|3.5e-01|-9.461942e+02 -9.465150e+02| 0:0:00| chol  2↙
2
20|0.966|0.952|2.1e-10|8.8e-11|1.4e-02|-9.465247e+02 -9.465335e+02| 0:0:00| chol  1↙
2
21|0.977|0.974|9.1e-10|2.9e-12|3.6e-04|-9.465365e+02 -9.465367e+02| 0:0:00| chol  6↙
5
22|0.960|0.971|1.4e-09|1.1e-13|1.6e-05|-9.465367e+02 -9.465367e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.46536735e+02
 dual   objective value = -9.46536743e+02
 gap := trace(XZ)       = 1.62e-05
 relative gap           = 8.56e-09
 actual relative gap    = 4.35e-09
 rel. primal infeas     = 1.37e-09
 rel. dual   infeas     = 1.08e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.8e-09  0.0e+00  1.5e-13  0.0e+00  4.4e-09  8.6e-09
-----------------------------------------------------------------

ans =

  946.5367

Epoch... 169
Epoch... 170

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|5.1e+09| 1.696145e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.4e-01|6.3e+08| 1.453459e+08  5.761308e+06| 0:0:00| chol  2↙
1
 2|0.665|0.658|2.2e-02|2.5e-01|3.2e+08| 1.130255e+08  5.364687e+06| 0:0:00| chol  1↙
1
 3|0.657|0.654|7.5e-03|8.7e-02|1.7e+08| 8.481879e+07  3.936118e+06| 0:0:00| chol  1↙
1
 4|0.804|0.774|1.5e-03|2.0e-02|8.8e+07| 5.197776e+07  1.373299e+06| 0:0:00| chol  2↙
1
 5|1.000|0.929|4.2e-10|1.4e-03|2.3e+07| 1.545582e+07 -9.898547e+04| 0:0:00| chol  2↙
```

```
2
 6|0.984|0.957|8.1e-10|6.2e-05|1.5e+06| 1.044358e+06 -7.859644e+03| 0:0:00| chol  2↙
2
 7|0.859|0.954|1.3e-09|3.5e-06|4.3e+05| 3.653429e+05 -6.707854e+03| 0:0:00| chol  1↙
1
 8|1.000|0.990|5.1e-11|8.6e-07|2.9e+04| 2.293295e+04 -5.101056e+03| 0:0:00| chol  2↙
2
 9|0.293|1.000|7.8e-11|4.2e-07|2.4e+04| 1.906537e+04 -4.580980e+03| 0:0:00| chol  1↙
1
10|0.965|0.745|8.8e-11|2.6e-07|1.1e+04| 8.787406e+03 -1.989363e+03| 0:0:00| chol  2↙
2
11|1.000|0.953|1.1e-10|1.1e-07|4.5e+03| 3.159014e+03 -1.261816e+03| 0:0:00| chol  2↙
1
12|0.862|1.000|2.9e-11|5.3e-08|1.8e+03| 6.216551e+02 -1.186138e+03| 0:0:00| chol  2↙
1
13|1.000|0.984|3.5e-11|2.7e-08|6.3e+02|-3.614053e+02 -9.867138e+02| 0:0:00| chol  2↙
2
14|0.889|1.000|1.6e-10|1.3e-08|1.5e+02|-8.153486e+02 -9.687743e+02| 0:0:00| chol  1↙
2
15|1.000|0.993|1.4e-10|6.6e-09|4.9e+01|-9.092857e+02 -9.576120e+02| 0:0:00| chol  2↙
1
16|0.857|1.000|5.0e-10|3.3e-09|7.9e+00|-9.488911e+02 -9.566041e+02| 0:0:00| chol  2↙
2
17|1.000|0.741|9.4e-10|2.1e-09|3.4e+00|-9.529411e+02 -9.562145e+02| 0:0:00| chol  2↙
2
18|0.805|1.000|7.7e-10|8.6e-10|9.6e-01|-9.553378e+02 -9.562457e+02| 0:0:00| chol  2↙
2
19|1.000|0.866|4.1e-09|5.3e-10|3.5e-01|-9.558882e+02 -9.562102e+02| 0:0:00| chol  2↙
2
20|0.962|0.953|5.8e-10|8.9e-11|1.5e-02|-9.562188e+02 -9.562291e+02| 0:0:00| chol  2↙
2
21|0.984|0.981|8.3e-10|2.1e-12|2.8e-04|-9.562321e+02 -9.562322e+02| 0:0:00| chol  7↙
30
22|0.960|0.982|7.0e-10|5.5e-14|1.1e-05|-9.562323e+02 -9.562323e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.56232295e+02
 dual   objective value = -9.56232300e+02
 gap := trace(XZ)       = 1.09e-05
 relative gap           = 5.71e-09
 actual relative gap    = 2.71e-09
 rel. primal infeas     = 6.97e-10
 rel. dual   infeas     = 5.51e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 9.1e-10  0.0e+00  7.8e-14  0.0e+00  2.7e-09  5.7e-09
-------------------------------------------------------------------

ans =
```

```
  956.2323

Epoch... 171
Epoch... 172

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|4.9e+09| 1.616102e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.934|0.931|6.6e-02|7.4e-01|6.0e+08| 1.387361e+08  5.776434e+06| 0:0:00| chol  1↙
1
 2|0.662|0.655|2.2e-02|2.6e-01|3.0e+08| 1.082622e+08  5.384097e+06| 0:0:00| chol  1↙
2
 3|0.653|0.651|7.7e-03|8.9e-02|1.7e+08| 8.167269e+07  3.975341e+06| 0:0:00| chol  1↙
1
 4|0.794|0.769|1.6e-03|2.1e-02|8.7e+07| 5.071279e+07  1.435399e+06| 0:0:00| chol  2↙
2
 5|1.000|0.924|1.2e-09|1.6e-03|2.4e+07| 1.607506e+07 -9.422416e+04| 0:0:00| chol  2↙
2
 6|0.985|0.954|3.6e-10|7.3e-05|1.6e+06| 1.083279e+06 -8.509064e+03| 0:0:00| chol  2↙
2
 7|0.839|0.927|7.0e-10|5.8e-06|4.4e+05| 3.752555e+05 -6.663402e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|3.2e-11|8.4e-07|5.1e+04| 4.315200e+04 -5.388358e+03| 0:0:00| chol  2↙
2
 9|0.624|0.906|2.6e-10|4.6e-07|2.9e+04| 2.585794e+04 -2.848366e+03| 0:0:00| chol  1↙
2
10|0.780|1.000|1.7e-10|2.1e-07|1.6e+04| 1.334998e+04 -2.210411e+03| 0:0:00| chol  2↙
2
11|1.000|0.953|2.4e-10|1.1e-07|5.7e+03| 4.378773e+03 -1.319478e+03| 0:0:00| chol  2↙
2
12|0.843|1.000|1.0e-10|5.3e-08|2.3e+03| 1.091684e+03 -1.214074e+03| 0:0:00| chol  1↙
2
13|1.000|0.973|7.1e-11|2.7e-08|8.1e+02|-1.521781e+02 -9.634184e+02| 0:0:00| chol  2↙
2
14|0.886|1.000|1.1e-10|1.3e-08|2.1e+02|-7.299539e+02 -9.407920e+02| 0:0:00| chol  2↙
1
15|1.000|0.987|1.5e-10|6.7e-09|6.8e+01|-8.562577e+02 -9.241318e+02| 0:0:00| chol  2↙
1
16|0.873|1.000|2.4e-10|3.3e-09|9.9e+00|-9.129521e+02 -9.226391e+02| 0:0:00| chol  2↙
2
17|1.000|0.744|4.8e-09|2.1e-09|4.2e+00|-9.179695e+02 -9.220568e+02| 0:0:00| chol  2↙
2
18|0.778|1.000|2.4e-09|8.9e-10|1.4e+00|-9.207254e+02 -9.220584e+02| 0:0:00| chol  2↙
2
19|1.000|0.912|1.4e-09|5.5e-10|4.9e-01|-9.215331e+02 -9.219958e+02| 0:0:00| chol  2↙
```

```
2
20|0.970|0.957|5.1e-10|9.1e-11|1.8e-02|-9.219990e+02 -9.220114e+02| 0:0:00| chol  2↙
2
21|0.985|0.984|3.5e-10|2.0e-12|3.0e-04|-9.220142e+02 -9.220144e+02| 0:0:00| chol  6↙
3
22|0.979|0.983|8.0e-10|4.5e-14|6.8e-06|-9.220144e+02 -9.220144e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.22014443e+02
 dual   objective value = -9.22014449e+02
 gap := trace(XZ)       = 6.81e-06
 relative gap           = 3.69e-09
 actual relative gap    = 3.49e-09
 rel. primal infeas     = 8.03e-10
 rel. dual   infeas     = 4.48e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-09  0.0e+00  6.3e-14  0.0e+00  3.5e-09  3.7e-09
-------------------------------------------------------------------

ans =

  922.0144

Epoch... 173
Epoch... 174

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|4.4e+09| 1.442657e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.3e-01|5.4e+08| 1.244353e+08  5.668351e+06| 0:0:00| chol  2↙
2
 2|0.656|0.650|2.2e-02|2.5e-01|2.7e+08| 9.711336e+07  5.286950e+06| 0:0:00| chol  1↙
1
 3|0.645|0.645|7.9e-03|9.0e-02|1.5e+08| 7.375908e+07  3.937080e+06| 0:0:00| chol  2↙
2
 4|0.778|0.762|1.8e-03|2.1e-02|8.0e+07| 4.667736e+07  1.489112e+06| 0:0:00| chol  2↙
2
 5|1.000|0.916|6.4e-10|1.8e-03|2.4e+07| 1.601664e+07 -7.384083e+04| 0:0:00| chol  2↙
2
 6|0.985|0.952|3.1e-10|8.7e-05|1.6e+06| 1.080342e+06 -7.663357e+03| 0:0:00| chol  2↙
```

```
2
 7|0.824|0.905|4.2e-10|8.7e-06|4.5e+05| 3.781102e+05 -6.282925e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|3.1e-11|8.4e-07|7.6e+04| 6.697043e+04 -5.647058e+03| 0:0:00| chol  1↙
1
 9|0.772|0.787|3.0e-10|5.1e-07|3.2e+04| 2.767682e+04 -3.256989e+03| 0:0:00| chol  1↙
1
10|1.000|1.000|1.9e-10|2.1e-07|1.5e+04| 1.244575e+04 -2.108237e+03| 0:0:00| chol  1↙
2
11|1.000|0.964|1.5e-10|1.1e-07|4.4e+03| 3.113646e+03 -1.256601e+03| 0:0:00| chol  2↙
1
12|0.886|1.000|3.8e-11|5.3e-08|1.8e+03| 6.749745e+02 -1.151420e+03| 0:0:00| chol  2↙
2
13|1.000|0.984|4.6e-11|2.7e-08|6.4e+02|-3.140396e+02 -9.499213e+02| 0:0:00| chol  1↙
2
14|0.890|1.000|1.7e-10|1.3e-08|1.6e+02|-7.759466e+02 -9.314104e+02| 0:0:00| chol  2↙
2
15|1.000|0.999|7.2e-11|6.6e-09|4.9e+01|-8.716434e+02 -9.204094e+02| 0:0:00| chol  2↙
2
16|0.849|1.000|1.3e-10|3.3e-09|8.4e+00|-9.111622e+02 -9.193557e+02| 0:0:00| chol  2↙
2
17|1.000|0.722|5.5e-09|2.1e-09|3.7e+00|-9.153389e+02 -9.189257e+02| 0:0:00| chol  2↙
2
18|0.803|1.000|1.5e-09|8.6e-10|1.1e+00|-9.179230e+02 -9.189593e+02| 0:0:00| chol  2↙
2
19|1.000|0.833|3.8e-10|5.3e-10|4.1e-01|-9.185227e+02 -9.189055e+02| 0:0:00| chol  2↙
2
20|0.954|0.962|3.1e-10|9.5e-11|2.2e-02|-9.189077e+02 -9.189241e+02| 0:0:00| chol  2↙
2
21|0.985|0.974|3.9e-10|3.1e-12|3.9e-04|-9.189266e+02 -9.189269e+02| 0:0:00| chol  4↙
4
22|0.988|0.986|1.7e-10|5.3e-14|5.4e-06|-9.189269e+02 -9.189269e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.18926924e+02
 dual   objective value = -9.18926927e+02
 gap := trace(XZ)       = 5.41e-06
 relative gap           = 2.94e-09
 actual relative gap    = 1.56e-09
 rel. primal infeas     = 1.69e-10
 rel. dual   infeas     = 5.30e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-10  0.0e+00  7.5e-14  0.0e+00  1.6e-09  2.9e-09
------------------------------------------------------------------

ans =

  918.9269
```

```
Epoch... 175
Epoch... 176

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.9e+09| 1.271164e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.4e-01|4.8e+08| 1.102832e+08  5.800147e+06| 0:0:00| chol  1↙
1
 2|0.648|0.642|2.3e-02|2.7e-01|2.4e+08| 8.639729e+07  5.421497e+06| 0:0:00| chol  1↙
2
 3|0.633|0.635|8.4e-03|9.7e-02|1.4e+08| 6.635889e+07  4.093845e+06| 0:0:00| chol  1↙
2
 4|0.755|0.752|2.1e-03|2.4e-02|7.4e+07| 4.318214e+07  1.657100e+06| 0:0:00| chol  2↙
2
 5|1.000|0.900|5.6e-10|2.4e-03|2.4e+07| 1.629118e+07 -2.670350e+04| 0:0:00| chol  2↙
2
 6|0.986|0.948|2.4e-10|1.3e-04|1.6e+06| 1.113212e+06 -5.300120e+03| 0:0:00| chol  2↙
2
 7|0.802|0.869|3.1e-10|1.7e-05|4.6e+05| 3.823360e+05 -5.164645e+03| 0:0:00| chol  2↙
2
 8|1.000|1.000|1.8e-11|8.4e-07|1.2e+05| 1.100960e+05 -5.937649e+03| 0:0:00| chol  1↙
2
 9|0.759|0.711|2.3e-10|5.4e-07|3.5e+04| 3.058938e+04 -3.722603e+03| 0:0:00| chol  1↙
1
10|0.593|1.000|3.1e-10|2.1e-07|2.4e+04| 2.098147e+04 -2.674203e+03| 0:0:00| chol  1↙
2
11|1.000|0.937|1.5e-10|1.1e-07|9.3e+03| 7.648781e+03 -1.576307e+03| 0:0:00| chol  2↙
2
12|0.884|1.000|1.3e-10|5.3e-08|3.8e+03| 2.391022e+03 -1.396396e+03| 0:0:00| chol  1↙
1
13|1.000|0.958|7.8e-11|2.7e-08|1.4e+03| 3.510839e+02 -9.969421e+02| 0:0:00| chol  2↙
2
14|0.901|1.000|7.3e-11|1.3e-08|4.0e+02|-5.604162e+02 -9.581871e+02| 0:0:00| chol  2↙
2
15|1.000|0.996|7.0e-11|6.6e-09|1.3e+02|-7.910063e+02 -9.220499e+02| 0:0:00| chol  1↙
2
16|0.893|1.000|2.4e-10|3.3e-09|1.8e+01|-9.017058e+02 -9.190457e+02| 0:0:00| chol  2↙
1
17|1.000|0.803|3.8e-09|2.0e-09|6.3e+00|-9.116577e+02 -9.178469e+02| 0:0:00| chol  2↙
2
18|0.909|1.000|1.4e-09|8.6e-10|2.3e+00|-9.154485e+02 -9.176778e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|2.4e-10|4.6e-10|7.5e-01|-9.168925e+02 -9.176186e+02| 0:0:00| chol  2↙
2
20|0.939|0.942|6.6e-10|1.1e-10|6.1e-02|-9.175657e+02 -9.176207e+02| 0:0:00| chol  2↙
```

```
2
21|0.984|0.976|1.1e-09|4.5e-12|1.1e-03|-9.176219e+02 -9.176227e+02| 0:0:00| chol  3↙
3
22|0.975|0.981|1.2e-10|1.3e-13|3.0e-05|-9.176228e+02 -9.176228e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.17622769e+02
 dual   objective value = -9.17622789e+02
 gap := trace(XZ)       = 2.99e-05
 relative gap           = 1.63e-08
 actual relative gap    = 1.06e-08
 rel. primal infeas     = 1.20e-10
 rel. dual   infeas     = 1.34e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.7e-10  0.0e+00  1.9e-13  0.0e+00  1.1e-08  1.6e-08
-------------------------------------------------------------------

ans =

  917.6228

Epoch... 177
Epoch... 178

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.9e+09| 1.279091e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.4e-01|4.8e+08| 1.109386e+08  5.811844e+06| 0:0:00| chol  1↙
1
 2|0.648|0.643|2.3e-02|2.7e-01|2.5e+08| 8.688357e+07  5.431360e+06| 0:0:00| chol  1↙
2
 3|0.633|0.636|8.4e-03|9.7e-02|1.4e+08| 6.670613e+07  4.099203e+06| 0:0:00| chol  1↙
2
 4|0.756|0.752|2.0e-03|2.4e-02|7.5e+07| 4.337176e+07  1.655786e+06| 0:0:00| chol  2↙
2
 5|1.000|0.901|5.7e-10|2.4e-03|2.4e+07| 1.632108e+07 -2.844118e+04| 0:0:00| chol  2↙
2
 6|0.986|0.948|2.5e-10|1.2e-04|1.6e+06| 1.115323e+06 -5.425235e+03| 0:0:00| chol  2↙
2
 7|0.802|0.870|3.4e-10|1.7e-05|4.6e+05| 3.836196e+05 -5.202556e+03| 0:0:00| chol  1↙
```

```
1
 8|1.000|1.000|7.7e-11|8.4e-07|1.2e+05| 1.102479e+05 -5.954915e+03| 0:0:00| chol  1↙
1
 9|0.759|0.711|2.3e-10|5.4e-07|3.5e+04| 3.067608e+04 -3.727484e+03| 0:0:00| chol  1↙
1
10|0.599|1.000|3.1e-10|2.1e-07|2.4e+04| 2.094419e+04 -2.669212e+03| 0:0:00| chol  1↙
2
11|1.000|0.937|1.4e-10|1.1e-07|9.3e+03| 7.623447e+03 -1.572067e+03| 0:0:00| chol  2↙
2
12|0.883|1.000|1.7e-10|5.3e-08|3.8e+03| 2.382576e+03 -1.393489e+03| 0:0:00| chol  2↙
1
13|1.000|0.958|3.5e-11|2.8e-08|1.3e+03| 3.489995e+02 -9.953688e+02| 0:0:00| chol  2↙
2
14|0.900|1.000|1.4e-11|1.3e-08|4.0e+02|-5.615599e+02 -9.568230e+02| 0:0:00| chol  1↙
1
15|1.000|0.996|1.1e-10|6.6e-09|1.3e+02|-7.909677e+02 -9.211294e+02| 0:0:00| chol  1↙
1
16|0.893|1.000|5.8e-10|3.3e-09|1.7e+01|-9.010616e+02 -9.181579e+02| 0:0:00| chol  2↙
1
17|1.000|0.800|2.9e-09|2.0e-09|6.3e+00|-9.108171e+02 -9.169750e+02| 0:0:00| chol  2↙
2
18|0.896|1.000|2.7e-09|8.3e-10|2.3e+00|-9.145396e+02 -9.168122e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|4.1e-11|4.3e-10|7.7e-01|-9.160001e+02 -9.167490e+02| 0:0:00| chol  2↙
2
20|0.923|0.953|1.1e-09|6.8e-11|7.7e-02|-9.166790e+02 -9.167517e+02| 0:0:00| chol  3↙
3
21|0.988|0.972|1.5e-09|5.4e-12|2.2e-03|-9.167513e+02 -9.167532e+02| 0:0:00| chol  3↙
3
22|0.988|0.987|7.9e-10|1.2e-13|2.9e-05|-9.167532e+02 -9.167532e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.16753216e+02
 dual   objective value = -9.16753239e+02
 gap := trace(XZ)       = 2.90e-05
 relative gap           = 1.58e-08
 actual relative gap    = 1.23e-08
 rel. primal infeas     = 7.85e-10
 rel. dual   infeas     = 1.16e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-09  0.0e+00  1.6e-13  0.0e+00  1.2e-08  1.6e-08
-----------------------------------------------------------------

ans =

  916.7532

Epoch... 179
Epoch... 180
```

```
 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.9e+09| 1.256952e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.935|0.932|6.5e-02|7.4e-01|4.7e+08| 1.091156e+08  5.818292e+06| 0:0:00| chol  1↙
1
 2|0.647|0.642|2.3e-02|2.7e-01|2.4e+08| 8.546107e+07  5.438064e+06| 0:0:00| chol  1↙
1
 3|0.632|0.635|8.4e-03|9.7e-02|1.4e+08| 6.568752e+07  4.110315e+06| 0:0:00| chol  1↙
2
 4|0.753|0.751|2.1e-03|2.4e-02|7.4e+07| 4.283672e+07  1.672106e+06| 0:0:00| chol  2↙
2
 5|1.000|0.899|6.6e-10|2.5e-03|2.4e+07| 1.626784e+07 -2.141237e+04| 0:0:00| chol  2↙
2
 6|0.986|0.947|2.8e-10|1.3e-04|1.6e+06| 1.115266e+06 -5.105993e+03| 0:0:00| chol  2↙
2
 7|0.800|0.867|3.6e-10|1.8e-05|4.6e+05| 3.822897e+05 -5.083350e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|4.9e-11|8.4e-07|1.2e+05| 1.121175e+05 -5.929778e+03| 0:0:00| chol  1↙
1
 9|0.766|0.714|2.4e-10|5.4e-07|3.6e+04| 3.115407e+04 -3.741208e+03| 0:0:00| chol  1↙
2
10|0.610|1.000|3.2e-10|2.1e-07|2.4e+04| 2.110783e+04 -2.678939e+03| 0:0:00| chol  1↙
2
11|1.000|0.937|1.5e-10|1.1e-07|9.3e+03| 7.664835e+03 -1.572845e+03| 0:0:00| chol  1↙
2
12|0.880|1.000|1.2e-10|5.3e-08|3.8e+03| 2.411439e+03 -1.393938e+03| 0:0:00| chol  1↙
1
13|1.000|0.958|9.3e-11|2.7e-08|1.4e+03| 3.614214e+02 -9.938022e+02| 0:0:00| chol  2↙
1
14|0.900|1.000|4.3e-11|1.3e-08|4.0e+02|-5.573107e+02 -9.551853e+02| 0:0:00| chol  2↙
2
15|1.000|0.996|2.2e-10|6.6e-09|1.3e+02|-7.883723e+02 -9.193622e+02| 0:0:00| chol  1↙
2
16|0.894|1.000|1.6e-10|3.3e-09|1.7e+01|-8.993494e+02 -9.163863e+02| 0:0:00| chol  2↙
2
17|1.000|0.800|2.4e-09|2.0e-09|6.3e+00|-9.090612e+02 -9.152102e+02| 0:0:00| chol  2↙
2
18|0.909|1.000|1.3e-09|8.5e-10|2.3e+00|-9.128111e+02 -9.150414e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|2.4e-09|4.6e-10|7.6e-01|-9.142522e+02 -9.149824e+02| 0:0:00| chol  2↙
2
20|0.934|0.941|1.5e-09|1.3e-10|6.8e-02|-9.149242e+02 -9.149847e+02| 0:0:00| chol  2↙
3
21|0.984|0.975|1.1e-10|5.3e-12|1.3e-03|-9.149856e+02 -9.149866e+02| 0:0:00| chol  3↙
```

```
3
22|0.965|0.978|9.7e-10|1.9e-13|4.8e-05|-9.149866e+02 -9.149867e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.14986626e+02
 dual   objective value = -9.14986662e+02
 gap := trace(XZ)       = 4.77e-05
 relative gap           = 2.60e-08
 actual relative gap    = 1.96e-08
 rel. primal infeas     = 9.70e-10
 rel. dual   infeas     = 1.91e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.4e-09  0.0e+00  2.7e-13  0.0e+00  2.0e-08  2.6e-08
-----------------------------------------------------------------

ans =

  914.9867

Epoch... 181
Epoch... 182

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|2.4e+09| 7.460266e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.935|6.3e-02|6.9e-01|2.9e+08| 6.706386e+07  5.424588e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.3e-02|2.6e-01|1.5e+08| 5.258905e+07  5.083393e+06| 0:0:00| chol  1↙
2
 3|0.604|0.612|9.2e-03|1.0e-01|8.7e+07| 4.128472e+07  3.950246e+06| 0:0:00| chol  1↙
2
 4|0.706|0.727|2.7e-03|2.7e-02|4.5e+07| 2.839997e+07  1.816686e+06| 0:0:00| chol  1↙
2
 5|1.000|0.846|8.9e-10|4.2e-03|1.7e+07| 1.125681e+07  1.915060e+05| 0:0:00| chol  2↙
2
 6|0.983|0.934|5.0e-10|2.8e-04|1.2e+06| 8.370874e+05  9.275363e+03| 0:0:00| chol  2↙
2
 7|0.785|0.811|4.1e-10|5.2e-05|3.8e+05| 3.170991e+05 -2.810399e+02| 0:0:00| chol  2↙
1
 8|0.942|0.776|1.0e-10|1.2e-05|1.4e+05| 1.228945e+05 -3.322204e+03| 0:0:00| chol  2↙
```

```
2
 9|0.701|0.953|5.8e-10|7.5e-07|7.3e+04| 6.704946e+04 -3.835534e+03| 0:0:00| chol  1↙
2
10|0.861|0.817|6.2e-10|2.9e-07|3.6e+04| 3.157738e+04 -3.433617e+03| 0:0:00| chol  2↙
2
11|0.513|0.292|5.5e-10|2.3e-07|2.9e+04| 2.618562e+04 -2.017446e+03| 0:0:00| chol  2↙
2
12|0.509|1.000|2.5e-10|5.3e-08|2.2e+04| 1.636298e+04 -5.119409e+03| 0:0:00| chol  2↙
2
13|0.990|1.000|1.2e-10|2.6e-08|7.8e+03| 5.728383e+03 -2.020957e+03| 0:0:00| chol  2↙
2
14|0.977|0.911|5.1e-11|1.4e-08|1.8e+03| 6.917936e+02 -1.081676e+03| 0:0:00| chol  2↙
2
15|1.000|1.000|5.6e-11|6.6e-09|6.2e+02|-3.375763e+02 -9.608214e+02| 0:0:00| chol  2↙
2
16|0.962|1.000|1.3e-11|3.3e-09|1.3e+02|-8.004582e+02 -9.296889e+02| 0:0:00| chol  1↙
2
17|1.000|1.000|2.8e-10|1.6e-09|3.8e+01|-8.854385e+02 -9.233361e+02| 0:0:00| chol  1↙
1
18|0.858|0.902|1.6e-10|9.1e-10|6.5e+00|-9.153791e+02 -9.217783e+02| 0:0:00| chol  2↙
2
19|1.000|0.855|1.2e-09|4.9e-10|2.6e+00|-9.188570e+02 -9.214437e+02| 0:0:00| chol  2↙
2
20|0.829|1.000|6.5e-10|5.0e-11|9.9e-01|-9.204338e+02 -9.214259e+02| 0:0:00| chol  2↙
2
21|1.000|1.000|3.1e-09|1.7e-11|3.2e-01|-9.210611e+02 -9.213838e+02| 0:0:00| chol  2↙
2
22|0.970|0.964|7.3e-10|1.9e-11|1.2e-02|-9.213660e+02 -9.213765e+02| 0:0:00| chol  3↙
2
23|0.987|0.987|1.5e-11|5.2e-13|1.7e-04|-9.213761e+02 -9.213763e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.21376119e+02
 dual   objective value = -9.21376256e+02
 gap := trace(XZ)       = 1.66e-04
 relative gap           = 9.00e-08
 actual relative gap    = 7.38e-08
 rel. primal infeas     = 1.54e-11
 rel. dual   infeas     = 5.16e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.2e+05, 9.9e+05, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.1e-11  0.0e+00  7.3e-13  0.0e+00  7.4e-08  9.0e-08
-------------------------------------------------------------------

ans =

  921.3763

Epoch... 183
Epoch... 184
```

```
 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|2.6e+09| 8.155578e+07  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.938|0.935|6.2e-02|6.7e-01|3.1e+08| 7.281674e+07  5.324239e+06| 0:0:00| chol  1↙
1
 2|0.634|0.629|2.3e-02|2.5e-01|1.6e+08| 5.686727e+07  4.979849e+06| 0:0:00| chol  1↙
1
 3|0.610|0.617|8.9e-03|9.6e-02|9.3e+07| 4.436953e+07  3.840197e+06| 0:0:00| chol  1↙
2
 4|0.717|0.733|2.5e-03|2.6e-02|5.3e+07| 3.013762e+07  1.713625e+06| 0:0:00| chol  2↙
2
 5|1.000|0.866|8.3e-10|3.4e-03|1.9e+07| 1.276664e+07  1.072890e+05| 0:0:00| chol  2↙
2
 6|0.985|0.942|8.6e-10|2.0e-04|1.4e+06| 9.438665e+05  2.528490e+03| 0:0:00| chol  2↙
2
 7|0.786|0.830|4.7e-10|3.4e-05|4.2e+05| 3.505132e+05 -2.691148e+03| 0:0:00| chol  2↙
1
 8|1.000|0.908|3.6e-11|3.4e-06|1.3e+05| 1.148685e+05 -4.964129e+03| 0:0:00| chol  2↙
2
 9|0.773|1.000|5.9e-10|4.2e-07|5.6e+04| 5.055036e+04 -3.829682e+03| 0:0:00| chol  1↙
2
10|1.000|0.948|4.4e-10|2.2e-07|2.1e+04| 1.873345e+04 -2.441108e+03| 0:0:00| chol  2↙
2
11|0.735|1.000|2.6e-10|1.1e-07|1.2e+04| 9.609909e+03 -2.191633e+03| 0:0:00| chol  1↙
1
12|1.000|0.971|5.0e-11|5.4e-08|4.8e+03| 3.543137e+03 -1.229793e+03| 0:0:00| chol  1↙
2
13|0.837|1.000|4.1e-11|2.6e-08|1.8e+03| 6.081681e+02 -1.143250e+03| 0:0:00| chol  2↙
2
14|1.000|0.963|6.5e-11|1.4e-08|6.0e+02|-3.546714e+02 -9.533965e+02| 0:0:00| chol  2↙
2
15|0.875|1.000|8.2e-11|6.6e-09|1.4e+02|-8.020927e+02 -9.374970e+02| 0:0:00| chol  1↙
2
16|1.000|0.947|6.7e-11|3.5e-09|4.3e+01|-8.848816e+02 -9.276962e+02| 0:0:00| chol  2↙
1
17|0.829|1.000|6.8e-10|1.7e-09|8.4e+00|-9.182592e+02 -9.266061e+02| 0:0:00| chol  2↙
1
18|1.000|0.718|3.2e-09|1.1e-09|3.7e+00|-9.224599e+02 -9.261383e+02| 0:0:00| chol  2↙
2
19|0.813|1.000|8.0e-10|4.4e-10|1.1e+00|-9.250877e+02 -9.261395e+02| 0:0:00| chol  2↙
2
20|1.000|0.833|7.9e-09|1.5e-10|4.1e-01|-9.256786e+02 -9.260781e+02| 0:0:00| chol  2↙
2
21|0.962|0.972|1.8e-10|3.7e-11|1.8e-02|-9.260621e+02 -9.260778e+02| 0:0:00| chol  3↙
```

```
3
22|0.980|0.964|2.5e-11|2.0e-12|4.2e-04|-9.260776e+02 -9.260779e+02| 0:0:00| chol  5↙
5
23|0.988|0.982|1.7e-10|4.6e-14|6.5e-06|-9.260779e+02 -9.260779e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.26077918e+02
 dual   objective value = -9.26077921e+02
 gap := trace(XZ)       = 6.49e-06
 relative gap           = 3.50e-09
 actual relative gap    = 1.41e-09
 rel. primal infeas     = 1.72e-10
 rel. dual   infeas     = 4.56e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.1e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.2e-10  0.0e+00  6.4e-14  0.0e+00  1.4e-09  3.5e-09
-------------------------------------------------------------------

ans =

  926.0779

Epoch... 185
Epoch... 186

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.9e+09| 9.069664e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.938|0.935|6.2e-02|6.9e-01|3.4e+08| 8.034805e+07  5.456868e+06| 0:0:00| chol  1↙
1
 2|0.637|0.632|2.3e-02|2.5e-01|1.8e+08| 6.266887e+07  5.099479e+06| 0:0:00| chol  1↙
1
 3|0.615|0.621|8.7e-03|9.6e-02|1.0e+08| 4.870413e+07  3.912788e+06| 0:0:00| chol  1↙
1
 4|0.725|0.737|2.4e-03|2.5e-02|5.7e+07| 3.278302e+07  1.710113e+06| 0:0:00| chol  1↙
2
 5|1.000|0.874|8.9e-10|3.2e-03|2.0e+07| 1.358739e+07  7.669908e+04| 0:0:00| chol  2↙
2
 6|0.985|0.943|4.0e-10|1.8e-04|1.4e+06| 9.862521e+05  6.467256e+02| 0:0:00| chol  2↙
2
 7|0.784|0.837|4.7e-10|3.0e-05|4.3e+05| 3.582317e+05 -3.248023e+03| 0:0:00| chol  1↙
```

```
1
 8|1.000|0.955|6.2e-11|1.7e-06|1.3e+05| 1.161340e+05 -5.273456e+03| 0:0:00| chol  1↙
2
 9|0.762|1.000|4.1e-10|4.2e-07|5.4e+04| 4.906956e+04 -3.808183e+03| 0:0:00| chol  1↙
1
10|1.000|1.000|1.0e-10|2.1e-07|2.0e+04| 1.738009e+04 -2.224453e+03| 0:0:00| chol  1↙
2
11|0.677|1.000|2.1e-10|1.1e-07|1.1e+04| 8.771130e+03 -2.154078e+03| 0:0:00| chol  1↙
1
12|1.000|0.940|4.9e-11|5.6e-08|3.9e+03| 2.686524e+03 -1.187565e+03| 0:0:00| chol  2↙
2
13|0.877|1.000|7.2e-11|2.6e-08|1.4e+03| 2.824871e+02 -1.077062e+03| 0:0:00| chol  2↙
2
14|1.000|0.989|7.9e-11|1.3e-08|4.6e+02|-4.798140e+02 -9.388707e+02| 0:0:00| chol  2↙
2
15|0.884|1.000|3.9e-11|6.6e-09|9.9e+01|-8.290738e+02 -9.275296e+02| 0:0:00| chol  1↙
2
16|1.000|0.954|1.0e-10|3.5e-09|3.0e+01|-8.906747e+02 -9.208113e+02| 0:0:00| chol  2↙
1
17|0.803|1.000|1.1e-09|1.7e-09|7.2e+00|-9.128942e+02 -9.200089e+02| 0:0:00| chol  2↙
2
18|1.000|0.779|6.4e-09|1.0e-09|3.0e+00|-9.166936e+02 -9.196549e+02| 0:0:00| chol  2↙
2
19|0.827|1.000|1.7e-09|4.4e-10|8.2e-01|-9.188640e+02 -9.196614e+02| 0:0:00| chol  2↙
2
20|1.000|0.836|7.2e-09|1.5e-10|2.9e-01|-9.193429e+02 -9.196293e+02| 0:0:00| chol  2↙
2
21|0.968|0.976|2.9e-10|2.5e-11|1.1e-02|-9.196192e+02 -9.196286e+02| 0:0:00| chol  3↙
3
22|0.986|0.988|1.7e-11|5.6e-13|1.6e-04|-9.196286e+02 -9.196287e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.19628600e+02
 dual   objective value = -9.19628729e+02
 gap := trace(XZ)       = 1.60e-04
 relative gap           = 8.71e-08
 actual relative gap    = 7.00e-08
 rel. primal infeas     = 1.71e-11
 rel. dual   infeas     = 5.62e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 9.9e+05, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.8e-11  0.0e+00  8.0e-13  0.0e+00  7.0e-08  8.7e-08
-------------------------------------------------------------------

ans =

  919.6287

Epoch... 187
Epoch... 188
```

```
 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.8e+09| 8.919255e+07  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.938|0.935|6.2e-02|6.9e-01|3.4e+08| 7.910395e+07  5.496319e+06| 0:0:00| chol  1↙
1
 2|0.636|0.631|2.3e-02|2.6e-01|1.7e+08| 6.173726e+07  5.137525e+06| 0:0:00| chol  1↙
2
 3|0.614|0.620|8.8e-03|9.7e-02|1.0e+08| 4.804357e+07  3.948061e+06| 0:0:00| chol  1↙
2
 4|0.722|0.736|2.4e-03|2.6e-02|5.6e+07| 3.243216e+07  1.737000e+06| 0:0:00| chol  1↙
2
 5|1.000|0.871|7.3e-10|3.3e-03|2.0e+07| 1.353652e+07  8.762730e+04| 0:0:00| chol  2↙
2
 6|0.986|0.942|3.5e-10|1.9e-04|1.4e+06| 9.867456e+05  1.539062e+03| 0:0:00| chol  2↙
2
 7|0.786|0.834|5.1e-10|3.2e-05|4.3e+05| 3.574923e+05 -2.900905e+03| 0:0:00| chol  2↙
2
 8|1.000|0.931|3.7e-11|2.5e-06|1.3e+05| 1.167111e+05 -5.104088e+03| 0:0:00| chol  1↙
2
 9|0.758|1.000|4.0e-10|4.2e-07|5.5e+04| 5.030982e+04 -3.813669e+03| 0:0:00| chol  1↙
1
10|1.000|1.000|1.5e-10|2.1e-07|2.0e+04| 1.774228e+04 -2.281414e+03| 0:0:00| chol  2↙
2
11|0.730|1.000|2.6e-10|1.1e-07|1.1e+04| 8.444324e+03 -2.072656e+03| 0:0:00| chol  1↙
1
12|1.000|0.947|3.7e-11|5.6e-08|3.8e+03| 2.558371e+03 -1.181963e+03| 0:0:00| chol  2↙
2
13|0.878|1.000|4.2e-11|2.6e-08|1.3e+03| 2.370021e+02 -1.080918e+03| 0:0:00| chol  2↙
2
14|1.000|0.990|4.7e-11|1.3e-08|4.5e+02|-5.002050e+02 -9.459199e+02| 0:0:00| chol  2↙
2
15|0.884|1.000|1.3e-10|6.6e-09|9.5e+01|-8.403925e+02 -9.348052e+02| 0:0:00| chol  2↙
2
16|1.000|0.954|1.8e-10|3.5e-09|2.9e+01|-8.996971e+02 -9.284728e+02| 0:0:00| chol  1↙
2
17|0.804|1.000|2.5e-11|1.7e-09|6.9e+00|-9.209560e+02 -9.277354e+02| 0:0:00| chol  2↙
2
18|1.000|0.780|2.2e-09|1.0e-09|2.9e+00|-9.246212e+02 -9.274150e+02| 0:0:00| chol  2↙
2
19|0.829|1.000|1.5e-10|4.2e-10|7.5e-01|-9.266964e+02 -9.274242e+02| 0:0:00| chol  2↙
2
20|1.000|0.858|2.9e-10|1.1e-10|2.8e-01|-9.271260e+02 -9.273969e+02| 0:0:00| chol  2↙
2
21|0.949|0.969|3.6e-09|2.4e-11|1.6e-02|-9.273844e+02 -9.273986e+02| 0:0:00| chol  3↙
```

```
3
22|0.981|0.941|4.0e-10|2.1e-12|3.9e-04|-9.273984e+02 -9.273987e+02| 0:0:00| chol  5↙
5
23|0.773|0.974|1.3e-10|1.7e-13|7.3e-05|-9.273986e+02 -9.273987e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.27398604e+02
 dual   objective value = -9.27398666e+02
 gap := trace(XZ)       = 7.29e-05
 relative gap           = 3.93e-08
 actual relative gap    = 3.35e-08
 rel. primal infeas     = 1.28e-10
 rel. dual   infeas     = 1.70e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 9.9e+05, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.1e-10  0.0e+00  2.4e-13  0.0e+00  3.4e-08  3.9e-08
-------------------------------------------------------------------

ans =

  927.3987

Epoch... 189
Epoch... 190

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.1e+09| 9.871687e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.938|0.935|6.2e-02|6.9e-01|3.7e+08| 8.697458e+07  5.493018e+06| 0:0:00| chol  2↙
1
 2|0.640|0.635|2.2e-02|2.5e-01|1.9e+08| 6.762454e+07  5.125531e+06| 0:0:00| chol  1↙
2
 3|0.620|0.625|8.4e-03|9.5e-02|1.1e+08| 5.229426e+07  3.908580e+06| 0:0:00| chol  1↙
1
 4|0.734|0.742|2.2e-03|2.4e-02|6.0e+07| 3.482418e+07  1.665070e+06| 0:0:00| chol  2↙
2
 5|1.000|0.882|7.3e-10|2.9e-03|2.1e+07| 1.404489e+07  4.339251e+04| 0:0:00| chol  2↙
2
 6|0.985|0.944|3.4e-10|1.6e-04|1.5e+06| 1.003532e+06 -1.257878e+03| 0:0:00| chol  2↙
2
 7|0.779|0.845|8.7e-10|2.5e-05|4.5e+05| 3.695112e+05 -3.856783e+03| 0:0:00| chol  2↙
```

```
2
 8|1.000|1.000|2.4e-11|8.4e-07|1.3e+05| 1.157265e+05 -5.610140e+03| 0:0:00| chol  1↙
1
 9|0.861|1.000|4.3e-10|4.2e-07|4.1e+04| 3.630052e+04 -3.554724e+03| 0:0:00| chol  1↙
1
10|1.000|1.000|2.5e-10|2.1e-07|1.8e+04| 1.553403e+04 -2.130540e+03| 0:0:00| chol  2↙
2
11|0.842|1.000|3.2e-10|1.1e-07|7.8e+03| 6.000715e+03 -1.742855e+03| 0:0:00| chol  1↙
1
12|1.000|0.985|4.3e-11|5.4e-08|2.9e+03| 1.756253e+03 -1.095943e+03| 0:0:00| chol  1↙
1
13|0.868|1.000|8.6e-11|2.6e-08|9.7e+02|-6.713861e+01 -1.035422e+03| 0:0:00| chol  1↙
2
14|1.000|0.977|6.3e-11|1.3e-08|3.3e+02|-6.063667e+02 -9.345610e+02| 0:0:00| chol  1↙
1
15|0.884|1.000|5.2e-11|6.6e-09|6.0e+01|-8.668859e+02 -9.264283e+02| 0:0:00| chol  1↙
2
16|1.000|0.906|3.4e-11|3.6e-09|1.8e+01|-9.047213e+02 -9.225948e+02| 0:0:00| chol  2↙
2
17|0.788|1.000|4.7e-10|1.7e-09|5.6e+00|-9.165763e+02 -9.221056e+02| 0:0:00| chol  2↙
2
18|1.000|0.940|2.3e-09|8.8e-10|2.1e+00|-9.198679e+02 -9.218981e+02| 0:0:00| chol  2↙
2
19|0.857|1.000|5.9e-10|4.3e-10|4.8e-01|-9.214487e+02 -9.219059e+02| 0:0:00| chol  2↙
2
20|1.000|0.945|1.5e-09|8.6e-11|1.5e-01|-9.217638e+02 -9.219057e+02| 0:0:00| chol  3↙
3
21|0.979|0.978|1.3e-10|7.4e-12|3.5e-03|-9.219035e+02 -9.219065e+02| 0:0:00| chol  3↙
3
22|0.980|0.986|7.1e-10|2.2e-13|7.2e-05|-9.219065e+02 -9.219065e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.21906459e+02
 dual   objective value = -9.21906518e+02
 gap := trace(XZ)       = 7.24e-05
 relative gap           = 3.92e-08
 actual relative gap    = 3.22e-08
 rel. primal infeas     = 7.08e-10
 rel. dual   infeas     = 2.20e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-09  0.0e+00  3.1e-13  0.0e+00  3.2e-08  3.9e-08
------------------------------------------------------------------

ans =

  921.9065

Epoch... 191
Epoch... 192
```

```
 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.7e+09| 8.284914e+07  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.938|0.935|6.2e-02|7.1e-01|3.1e+08| 7.387596e+07  5.624231e+06| 0:0:00| chol  1↙
1
 2|0.632|0.627|2.3e-02|2.6e-01|1.6e+08| 5.780928e+07  5.264983e+06| 0:0:00| chol  1↙
2
 3|0.608|0.615|9.0e-03|1.0e-01|9.5e+07| 4.522772e+07  4.074947e+06| 0:0:00| chol  1↙
1
 4|0.712|0.730|2.6e-03|2.8e-02|4.9e+07| 3.089687e+07  1.845051e+06| 0:0:00| chol  2↙
2
 5|1.000|0.853|7.7e-10|4.1e-03|1.8e+07| 1.203793e+07  1.701710e+05| 0:0:00| chol  1↙
2
 6|0.983|0.934|3.8e-10|2.7e-04|1.3e+06| 8.817652e+05  8.111121e+03| 0:0:00| chol  2↙
2
 7|0.781|0.816|6.4e-10|5.0e-05|4.0e+05| 3.298971e+05 -5.794895e+02| 0:0:00| chol  2↙
2
 8|0.962|0.795|6.4e-11|1.0e-05|1.4e+05| 1.223002e+05 -3.603349e+03| 0:0:00| chol  2↙
2
 9|0.722|0.988|4.1e-10|4.6e-07|6.9e+04| 6.364476e+04 -3.818666e+03| 0:0:00| chol  2↙
2
10|0.763|1.000|4.3e-10|2.1e-07|3.6e+04| 3.232285e+04 -3.154759e+03| 0:0:00| chol  2↙
2
11|1.000|0.864|6.4e-10|1.2e-07|1.5e+04| 1.325654e+04 -1.943370e+03| 0:0:00| chol  2↙
2
12|0.725|1.000|1.4e-10|5.3e-08|7.2e+03| 5.259402e+03 -1.891979e+03| 0:0:00| chol  1↙
1
13|1.000|0.897|1.0e-10|2.9e-08|2.7e+03| 1.556563e+03 -1.097442e+03| 0:0:00| chol  2↙
2
14|0.839|1.000|5.8e-11|1.3e-08|8.4e+02|-1.802801e+02 -1.017533e+03| 0:0:00| chol  1↙
2
15|1.000|0.941|6.9e-11|7.0e-09|2.9e+02|-6.422111e+02 -9.313005e+02| 0:0:00| chol  1↙
2
16|0.881|1.000|3.6e-11|3.3e-09|5.0e+01|-8.746094e+02 -9.244170e+02| 0:0:00| chol  1↙
2
17|1.000|0.878|1.1e-09|1.9e-09|1.6e+01|-9.055851e+02 -9.210176e+02| 0:0:00| chol  1↙
2
18|0.800|1.000|1.5e-09|8.3e-10|4.9e+00|-9.157272e+02 -9.205562e+02| 0:0:00| chol  2↙
2
19|1.000|0.966|6.0e-09|4.4e-10|1.8e+00|-9.186391e+02 -9.203837e+02| 0:0:00| chol  2↙
2
20|0.872|1.000|3.0e-09|6.5e-11|3.5e-01|-9.200438e+02 -9.203911e+02| 0:0:00| chol  2↙
3
21|1.000|0.997|9.5e-09|4.1e-11|1.0e-01|-9.202815e+02 -9.203803e+02| 0:0:00| chol  2↙
```

```
2
22|0.969|0.947|4.7e-10|8.0e-12|3.7e-03|-9.203763e+02 -9.203795e+02| 0:0:00| chol  3↙
3
23|0.934|0.942|5.7e-10|9.6e-13|3.1e-04|-9.203792e+02 -9.203795e+02| 0:0:00| chol  7↙
6
24|0.951|0.934|4.1e-09|2.0e-13|8.8e-05|-9.203794e+02 -9.203795e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 24
 primal objective value = -9.20379394e+02
 dual   objective value = -9.20379464e+02
 gap := trace(XZ)       = 8.79e-05
 relative gap           = 4.77e-08
 actual relative gap    = 3.82e-08
 rel. primal infeas     = 4.07e-09
 rel. dual   infeas     = 2.04e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 9.5e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.0e-09  0.0e+00  2.9e-13  0.0e+00  3.8e-08  4.8e-08
-------------------------------------------------------------------

ans =

  920.3795

Epoch... 193
Epoch... 194

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.6e+09| 7.976539e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.4e-01|3.1e+08| 7.129169e+07  5.817818e+06| 0:0:00| chol  1↙
1
 2|0.628|0.624|2.4e-02|2.8e-01|1.6e+08| 5.607400e+07  5.457134e+06| 0:0:00| chol  1↙
1
 3|0.603|0.611|9.4e-03|1.1e-01|9.3e+07| 4.410126e+07  4.249765e+06| 0:0:00| chol  1↙
2
 4|0.704|0.725|2.8e-03|3.0e-02|4.9e+07| 3.041902e+07  1.969942e+06| 0:0:00| chol  2↙
2
 5|1.000|0.845|7.8e-10|4.6e-03|1.8e+07| 1.213895e+07  2.163110e+05| 0:0:00| chol  2↙
2
 6|0.983|0.930|8.2e-10|3.2e-04|1.3e+06| 9.011508e+05  1.189586e+04| 0:0:00| chol  2↙
```

```
2
 7|0.808|0.812|5.9e-10|6.1e-05|3.8e+05| 3.167514e+05  4.852356e+02| 0:0:00| chol  2↙
1
 8|0.956|0.749|1.3e-10|1.5e-05|1.3e+05| 1.202327e+05 -2.793970e+03| 0:0:00| chol  2↙
2
 9|0.650|0.867|4.0e-10|2.1e-06|7.7e+04| 7.083585e+04 -3.591195e+03| 0:0:00| chol  1↙
2
10|0.722|1.000|4.6e-10|2.1e-07|4.3e+04| 3.870723e+04 -3.398050e+03| 0:0:00| chol  2↙
2
11|1.000|0.563|9.6e-10|1.5e-07|2.2e+04| 1.906636e+04 -2.362442e+03| 0:0:00| chol  2↙
2
12|0.683|1.000|2.9e-10|5.3e-08|1.1e+04| 7.938979e+03 -2.587643e+03| 0:0:00| chol  2↙
2
13|1.000|0.882|1.5e-10|3.0e-08|4.0e+03| 2.739768e+03 -1.203687e+03| 0:0:00| chol  2↙
2
14|0.825|1.000|3.3e-11|1.3e-08|1.1e+03| 7.881493e+01 -1.067693e+03| 0:0:00| chol  2↙
1
15|1.000|0.882|9.6e-11|7.4e-09|4.1e+02|-5.286340e+02 -9.353991e+02| 0:0:00| chol  2↙
2
16|0.866|1.000|1.8e-10|3.3e-09|7.9e+01|-8.463617e+02 -9.247135e+02| 0:0:00| chol  2↙
2
17|1.000|0.870|7.5e-10|1.9e-09|2.6e+01|-8.931704e+02 -9.188684e+02| 0:0:00| chol  2↙
2
18|0.797|1.000|1.9e-10|8.5e-10|6.4e+00|-9.117776e+02 -9.181121e+02| 0:0:00| chol  1↙
2
19|1.000|0.788|7.9e-09|5.4e-10|2.6e+00|-9.152096e+02 -9.178148e+02| 0:0:00| chol  2↙
2
20|0.842|1.000|4.0e-09|9.1e-11|6.3e-01|-9.171920e+02 -9.178164e+02| 0:0:00| chol  2↙
2
21|1.000|0.905|4.3e-09|8.8e-11|2.0e-01|-9.175866e+02 -9.177863e+02| 0:0:00| chol  2↙
2
22|0.976|0.977|1.9e-10|1.1e-11|5.5e-03|-9.177785e+02 -9.177833e+02| 0:0:00| chol  3↙
3
23|0.982|0.985|2.3e-10|3.3e-13|1.1e-04|-9.177832e+02 -9.177833e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.17783183e+02
 dual   objective value = -9.17783271e+02
 gap := trace(XZ)       = 1.05e-04
 relative gap           = 5.73e-08
 actual relative gap    = 4.78e-08
 rel. primal infeas     = 2.25e-10
 rel. dual   infeas     = 3.31e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 9.9e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.2e-10  0.0e+00  4.7e-13  0.0e+00  4.8e-08  5.7e-08
-----------------------------------------------------------------

ans =
```

```
  917.7833

Epoch... 195
Epoch... 196

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.6e+09| 8.163050e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.4e-01|3.1e+08| 7.282812e+07  5.848991e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.4e-02|2.8e-01|1.6e+08| 5.727229e+07  5.485399e+06| 0:0:00| chol  1↙
1
 3|0.604|0.612|9.3e-03|1.1e-01|9.5e+07| 4.501110e+07  4.267737e+06| 0:0:00| chol  1↙
2
 4|0.705|0.726|2.7e-03|3.0e-02|4.9e+07| 3.099548e+07  1.971025e+06| 0:0:00| chol  1↙
1
 5|1.000|0.846|7.6e-10|4.5e-03|1.8e+07| 1.231952e+07  2.097590e+05| 0:0:00| chol  2↙
2
 6|0.983|0.930|9.2e-10|3.2e-04|1.3e+06| 9.113478e+05  1.143765e+04| 0:0:00| chol  2↙
2
 7|0.808|0.814|6.0e-10|5.9e-05|3.8e+05| 3.190829e+05  3.369087e+02| 0:0:00| chol  2↙
2
 8|0.961|0.753|8.4e-11|1.5e-05|1.3e+05| 1.198671e+05 -2.893641e+03| 0:0:00| chol  1↙
2
 9|0.655|0.876|3.7e-10|2.0e-06|7.6e+04| 6.997430e+04 -3.611146e+03| 0:0:00| chol  2↙
2
10|0.717|1.000|4.2e-10|2.1e-07|4.2e+04| 3.816684e+04 -3.350655e+03| 0:0:00| chol  2↙
2
11|1.000|0.754|7.5e-10|1.3e-07|1.9e+04| 1.660424e+04 -2.236480e+03| 0:0:00| chol  2↙
2
12|0.701|1.000|1.9e-10|5.3e-08|9.4e+03| 7.151853e+03 -2.184720e+03| 0:0:00| chol  2↙
2
13|1.000|0.880|1.2e-10|3.0e-08|3.6e+03| 2.431466e+03 -1.166083e+03| 0:0:00| chol  1↙
2
14|0.828|1.000|5.8e-11|1.3e-08|1.2e+03| 1.193467e+02 -1.062862e+03| 0:0:00| chol  2↙
2
15|1.000|0.926|1.4e-10|7.1e-09|4.1e+02|-5.206224e+02 -9.333264e+02| 0:0:00| chol  2↙
1
16|0.872|1.000|1.1e-11|3.3e-09|8.1e+01|-8.423575e+02 -9.227541e+02| 0:0:00| chol  2↙
2
17|1.000|0.899|3.6e-10|1.8e-09|2.5e+01|-8.917889e+02 -9.171536e+02| 0:0:00| chol  2↙
2
18|0.795|1.000|6.8e-11|8.3e-10|6.5e+00|-9.100288e+02 -9.164333e+02| 0:0:00| chol  2↙
2
19|1.000|0.800|6.2e-10|5.0e-10|2.6e+00|-9.135313e+02 -9.161415e+02| 0:0:00| chol  2↙
```

```
2
20|0.839|1.000|5.6e-10|4.9e-11|6.5e-01|-9.155031e+02 -9.161454e+02| 0:0:00| chol  2↙
2
21|1.000|0.872|1.1e-08|2.1e-11|2.3e-01|-9.158859e+02 -9.161136e+02| 0:0:00| chol  2↙
3
22|0.982|0.976|1.2e-09|8.3e-12|4.6e-03|-9.161068e+02 -9.161109e+02| 0:0:00| chol  4↙
4
23|0.987|0.987|5.9e-10|2.1e-13|6.8e-05|-9.161108e+02 -9.161108e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.16110791e+02
 dual   objective value = -9.16110847e+02
 gap := trace(XZ)       = 6.82e-05
 relative gap           = 3.72e-08
 actual relative gap    = 3.07e-08
 rel. primal infeas     = 5.95e-10
 rel. dual   infeas     = 2.14e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-09  0.0e+00  3.0e-13  0.0e+00  3.1e-08  3.7e-08
-----------------------------------------------------------------

ans =

  916.1108

Epoch... 197
Epoch... 198

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|2.6e+09| 8.214744e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.4e-01|3.1e+08| 7.325577e+07  5.858773e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.4e-02|2.8e-01|1.6e+08| 5.759651e+07  5.493941e+06| 0:0:00| chol  1↙
1
 3|0.605|0.612|9.3e-03|1.1e-01|9.6e+07| 4.525369e+07  4.272967e+06| 0:0:00| chol  1↙
2
 4|0.706|0.727|2.7e-03|2.9e-02|5.0e+07| 3.114635e+07  1.971042e+06| 0:0:00| chol  2↙
2
 5|1.000|0.847|7.4e-10|4.5e-03|1.8e+07| 1.236389e+07  2.078234e+05| 0:0:00| chol  2↙
```

```
2
 6|0.983|0.930|8.7e-10|3.2e-04|1.3e+06| 9.137882e+05  1.131536e+04| 0:0:00| chol  2↙
2
 7|0.807|0.814|6.0e-10|5.9e-05|3.9e+05| 3.197312e+05  2.992551e+02| 0:0:00| chol  2↙
2
 8|0.963|0.754|8.4e-11|1.5e-05|1.3e+05| 1.198117e+05 -2.919163e+03| 0:0:00| chol  2↙
2
 9|0.657|0.878|3.6e-10|1.9e-06|7.6e+04| 6.976745e+04 -3.616339e+03| 0:0:00| chol  1↙
2
10|0.715|1.000|4.0e-10|2.1e-07|4.2e+04| 3.803503e+04 -3.336333e+03| 0:0:00| chol  1↙
2
11|1.000|0.801|7.2e-10|1.3e-07|1.8e+04| 1.595936e+04 -2.190698e+03| 0:0:00| chol  1↙
2
12|0.708|1.000|1.6e-10|5.3e-08|9.1e+03| 6.920595e+03 -2.106029e+03| 0:0:00| chol  2↙
2
13|1.000|0.892|1.1e-10|2.9e-08|3.5e+03| 2.299790e+03 -1.153356e+03| 0:0:00| chol  2↙
2
14|0.837|1.000|1.1e-10|1.3e-08|1.2e+03| 9.993351e+01 -1.055787e+03| 0:0:00| chol  2↙
2
15|1.000|0.943|9.2e-11|7.0e-09|4.0e+02|-5.326499e+02 -9.321739e+02| 0:0:00| chol  1↙
1
16|0.876|1.000|8.6e-11|3.3e-09|7.8e+01|-8.446233e+02 -9.221047e+02| 0:0:00| chol  2↙
2
17|1.000|0.908|3.8e-10|1.8e-09|2.4e+01|-8.927949e+02 -9.168416e+02| 0:0:00| chol  1↙
1
18|0.793|1.000|5.5e-10|8.5e-10|6.3e+00|-9.099328e+02 -9.161631e+02| 0:0:00| chol  2↙
2
19|1.000|0.823|3.1e-09|5.3e-10|2.5e+00|-9.134017e+02 -9.158876e+02| 0:0:00| chol  2↙
2
20|0.848|1.000|4.7e-09|9.9e-11|5.9e-01|-9.153087e+02 -9.158896e+02| 0:0:00| chol  2↙
2
21|1.000|0.969|1.0e-09|9.4e-11|1.8e-01|-9.156876e+02 -9.158631e+02| 0:0:00| chol  2↙
2
22|0.981|0.980|4.6e-10|8.0e-12|3.8e-03|-9.158580e+02 -9.158614e+02| 0:0:00| chol  3↙
3
23|0.971|0.981|4.0e-10|3.4e-13|1.2e-04|-9.158612e+02 -9.158613e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.15861229e+02
 dual   objective value = -9.15861327e+02
 gap := trace(XZ)       = 1.19e-04
 relative gap           = 6.50e-08
 actual relative gap    = 5.35e-08
 rel. primal infeas     = 3.99e-10
 rel. dual   infeas     = 3.39e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.4e-10  0.0e+00  4.8e-13  0.0e+00  5.3e-08  6.5e-08
-----------------------------------------------------------------
```

```
ans =

  915.8613

Epoch... 199
Epoch... 200

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.6e+09| 8.196665e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.4e-01|3.1e+08| 7.310880e+07  5.865205e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.4e-02|2.8e-01|1.6e+08| 5.747466e+07  5.499784e+06| 0:0:00| chol  1↙
1
 3|0.604|0.612|9.3e-03|1.1e-01|9.5e+07| 4.516126e+07  4.278032e+06| 0:0:00| chol  1↙
2
 4|0.706|0.726|2.7e-03|3.0e-02|5.0e+07| 3.109089e+07  1.974492e+06| 0:0:00| chol  1↙
1
 5|1.000|0.846|7.4e-10|4.5e-03|1.8e+07| 1.235008e+07  2.093940e+05| 0:0:00| chol  2↙
2
 6|0.983|0.930|5.9e-10|3.2e-04|1.3e+06| 9.132843e+05  1.147030e+04| 0:0:00| chol  2↙
2
 7|0.808|0.814|5.8e-10|6.0e-05|3.9e+05| 3.193901e+05  3.466840e+02| 0:0:00| chol  2↙
1
 8|0.962|0.753|1.0e-10|1.5e-05|1.3e+05| 1.198865e+05 -2.887610e+03| 0:0:00| chol  1↙
2
 9|0.654|0.874|3.6e-10|2.0e-06|7.6e+04| 7.006839e+04 -3.606437e+03| 0:0:00| chol  2↙
2
10|0.712|1.000|4.0e-10|2.1e-07|4.2e+04| 3.832206e+04 -3.344287e+03| 0:0:00| chol  2↙
2
11|1.000|0.802|7.1e-10|1.3e-07|1.8e+04| 1.605105e+04 -2.199502e+03| 0:0:00| chol  2↙
2
12|0.707|1.000|1.7e-10|5.3e-08|9.1e+03| 6.987084e+03 -2.110905e+03| 0:0:00| chol  2↙
2
13|1.000|0.893|1.1e-10|2.9e-08|3.5e+03| 2.328016e+03 -1.155297e+03| 0:0:00| chol  1↙
1
14|0.838|1.000|1.0e-10|1.3e-08|1.2e+03| 1.124257e+02 -1.057363e+03| 0:0:00| chol  1↙
2
15|1.000|0.944|1.6e-10|7.0e-09|4.0e+02|-5.281149e+02 -9.322542e+02| 0:0:00| chol  2↙
1
16|0.876|1.000|1.5e-10|3.3e-09|7.9e+01|-8.433474e+02 -9.220529e+02| 0:0:00| chol  2↙
2
17|1.000|0.910|7.8e-10|1.8e-09|2.5e+01|-8.923019e+02 -9.167142e+02| 0:0:00| chol  1↙
1
18|0.794|1.000|4.3e-10|8.7e-10|6.3e+00|-9.097578e+02 -9.160283e+02| 0:0:00| chol  2↙
```

```
2
19|1.000|0.822|1.4e-10|5.6e-10|2.5e+00|-9.132550e+02 -9.157505e+02| 0:0:00| chol  2↙
2
20|0.853|1.000|5.0e-10|6.9e-11|5.7e-01|-9.151861e+02 -9.157502e+02| 0:0:00| chol  2↙
2
21|1.000|0.975|3.1e-09|4.7e-11|1.8e-01|-9.155522e+02 -9.157254e+02| 0:0:00| chol  2↙
2
22|0.984|0.979|7.4e-10|5.9e-12|3.1e-03|-9.157213e+02 -9.157240e+02| 0:0:00| chol  4↙
3
23|0.968|0.981|2.1e-09|2.8e-13|1.0e-04|-9.157239e+02 -9.157240e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.15723898e+02
 dual   objective value = -9.15723982e+02
 gap := trace(XZ)       = 1.04e-04
 relative gap           = 5.69e-08
 actual relative gap    = 4.63e-08
 rel. primal infeas     = 2.09e-09
 rel. dual   infeas     = 2.81e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.9e-09  0.0e+00  4.0e-13  0.0e+00  4.6e-08  5.7e-08
-------------------------------------------------------------------

ans =

  915.7240

Epoch... 201
Epoch... 202

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.6e+09| 8.174415e+07  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.937|0.934|6.3e-02|7.4e-01|3.1e+08| 7.292384e+07  5.874259e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.4e-02|2.8e-01|1.6e+08| 5.733852e+07  5.508547e+06| 0:0:00| chol  1↙
1
 3|0.604|0.612|9.3e-03|1.1e-01|9.5e+07| 4.506480e+07  4.285944e+06| 0:0:00| chol  1↙
2
 4|0.705|0.726|2.7e-03|3.0e-02|4.9e+07| 3.103871e+07  1.980190e+06| 0:0:00| chol  1↙
```

```
2
 5|1.000|0.846|7.4e-10|4.6e-03|1.8e+07| 1.234298e+07  2.117848e+05| 0:0:00| chol  2↙
2
 6|0.983|0.930|4.3e-10|3.2e-04|1.3e+06| 9.134343e+05  1.171091e+04| 0:0:00| chol  2↙
2
 7|0.808|0.814|5.9e-10|6.0e-05|3.8e+05| 3.189171e+05  4.225705e+02| 0:0:00| chol  1↙
1
 8|0.961|0.750|8.6e-11|1.5e-05|1.3e+05| 1.199314e+05 -2.836994e+03| 0:0:00| chol  2↙
2
 9|0.651|0.869|3.6e-10|2.1e-06|7.7e+04| 7.047520e+04 -3.588418e+03| 0:0:00| chol  2↙
2
10|0.709|1.000|4.1e-10|2.1e-07|4.3e+04| 3.873673e+04 -3.356041e+03| 0:0:00| chol  2↙
2
11|1.000|0.795|7.0e-10|1.3e-07|1.9e+04| 1.626350e+04 -2.219217e+03| 0:0:00| chol  2↙
2
12|0.706|1.000|1.7e-10|5.3e-08|9.3e+03| 7.114960e+03 -2.128141e+03| 0:0:00| chol  2↙
2
13|1.000|0.892|1.2e-10|2.9e-08|3.6e+03| 2.387238e+03 -1.160825e+03| 0:0:00| chol  1↙
2
14|0.838|1.000|2.4e-11|1.3e-08|1.2e+03| 1.336287e+02 -1.061667e+03| 0:0:00| chol  1↙
2
15|1.000|0.944|7.4e-11|7.0e-09|4.1e+02|-5.204587e+02 -9.336118e+02| 0:0:00| chol  1↙
1
16|0.876|1.000|6.5e-12|3.3e-09|8.1e+01|-8.422194e+02 -9.231543e+02| 0:0:00| chol  2↙
1
17|1.000|0.911|3.1e-10|1.8e-09|2.5e+01|-8.925260e+02 -9.176613e+02| 0:0:00| chol  1↙
2
18|0.795|1.000|8.4e-10|8.3e-10|6.5e+00|-9.105553e+02 -9.169597e+02| 0:0:00| chol  2↙
2
19|1.000|0.808|5.6e-09|4.9e-10|2.6e+00|-9.140821e+02 -9.166721e+02| 0:0:00| chol  2↙
2
20|0.839|1.000|1.3e-09|4.6e-11|6.4e-01|-9.160420e+02 -9.166762e+02| 0:0:00| chol  2↙
2
21|1.000|0.874|4.3e-09|1.6e-11|2.3e-01|-9.164199e+02 -9.166453e+02| 0:0:00| chol  2↙
2
22|0.981|0.974|1.4e-10|8.6e-12|4.9e-03|-9.166384e+02 -9.166428e+02| 0:0:00| chol  3↙
3
23|0.987|0.988|1.4e-09|2.2e-13|7.0e-05|-9.166427e+02 -9.166428e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.16642725e+02
 dual   objective value = -9.16642783e+02
 gap := trace(XZ)       = 6.96e-05
 relative gap           = 3.79e-08
 actual relative gap    = 3.17e-08
 rel. primal infeas     = 1.43e-09
 rel. dual   infeas     = 2.17e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.7e-09  0.0e+00  3.1e-13  0.0e+00  3.2e-08  3.8e-08
```

```
-----------------------------------------------------------------

ans =

  916.6428

Epoch... 203
Epoch... 204

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.0e+09| 9.542925e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.936|0.933|6.4e-02|7.5e-01|3.6e+08| 8.419634e+07  5.900771e+06| 0:0:00| chol  1↙
1
 2|0.634|0.630|2.3e-02|2.8e-01|1.9e+08| 6.606590e+07  5.525818e+06| 0:0:00| chol  1↙
1
 3|0.613|0.619|9.0e-03|1.1e-01|1.1e+08| 5.156474e+07  4.260838e+06| 0:0:00| chol  1↙
2
 4|0.719|0.734|2.5e-03|2.8e-02|5.5e+07| 3.495193e+07  1.897319e+06| 0:0:00| chol  2↙
2
 5|1.000|0.860|1.8e-09|3.9e-03|2.0e+07| 1.333708e+07  1.426881e+05| 0:0:00| chol  1↙
2
 6|0.983|0.934|3.4e-10|2.6e-04|1.4e+06| 9.576558e+05  5.859216e+03| 0:0:00| chol  2↙
2
 7|0.789|0.824|4.4e-10|4.6e-05|4.1e+05| 3.382084e+05 -1.423152e+03| 0:0:00| chol  2↙
1
 8|0.994|0.816|7.9e-11|8.6e-06|1.3e+05| 1.178962e+05 -4.052373e+03| 0:0:00| chol  1↙
2
 9|0.736|0.997|2.7e-10|4.3e-07|6.5e+04| 5.938759e+04 -3.794972e+03| 0:0:00| chol  1↙
2
10|0.722|1.000|1.7e-10|2.1e-07|3.5e+04| 3.136297e+04 -3.046816e+03| 0:0:00| chol  2↙
2
11|1.000|0.982|3.5e-10|1.1e-07|1.2e+04| 1.035740e+04 -1.737478e+03| 0:0:00| chol  1↙
2
12|0.757|1.000|5.3e-11|5.3e-08|5.8e+03| 4.167020e+03 -1.654695e+03| 0:0:00| chol  2↙
2
13|1.000|0.945|5.2e-11|2.8e-08|2.1e+03| 1.013394e+03 -1.049495e+03| 0:0:00| chol  2↙
2
14|0.893|1.000|6.8e-11|1.3e-08|6.4e+02|-3.509142e+02 -9.891375e+02| 0:0:00| chol  2↙
2
15|1.000|0.991|4.8e-11|6.7e-09|2.1e+02|-7.157842e+02 -9.284315e+02| 0:0:00| chol  2↙
1
16|0.895|1.000|1.4e-10|3.3e-09|3.1e+01|-8.928538e+02 -9.236593e+02| 0:0:00| chol  2↙
2
17|1.000|0.854|5.9e-11|1.9e-09|9.5e+00|-9.122643e+02 -9.216969e+02| 0:0:00| chol  2↙
```

```
2
18|1.000|1.000|1.6e-09|8.4e-10|2.9e+00|-9.185718e+02 -9.213873e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|7.9e-10|4.3e-10|9.2e-01|-9.204372e+02 -9.213358e+02| 0:0:00| chol  2↙
2
20|0.908|0.963|1.5e-09|8.2e-11|1.3e-01|-9.212148e+02 -9.213361e+02| 0:0:00| chol  3↙
3
21|1.000|0.936|6.1e-11|2.3e-11|1.1e-02|-9.213269e+02 -9.213366e+02| 0:0:00| chol  3↙
3
22|0.943|0.950|2.6e-09|2.4e-12|8.1e-04|-9.213358e+02 -9.213365e+02| 0:0:00| chol  4↙
3
23|0.984|0.951|7.6e-09|3.4e-13|1.4e-04|-9.213363e+02 -9.213365e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.21336344e+02
 dual   objective value = -9.21336473e+02
 gap := trace(XZ)       = 1.42e-04
 relative gap           = 7.69e-08
 actual relative gap    = 6.99e-08
 rel. primal infeas     = 7.65e-09
 rel. dual   infeas     = 3.44e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.3e-08  0.0e+00  4.9e-13  0.0e+00  7.0e-08  7.7e-08
-------------------------------------------------------------------

ans =

  921.3365

Epoch... 205
Epoch... 206

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.0e+09| 9.425994e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.936|0.933|6.4e-02|7.5e-01|3.6e+08| 8.323401e+07  5.904322e+06| 0:0:00| chol  1↙
1
 2|0.634|0.629|2.3e-02|2.8e-01|1.9e+08| 6.531887e+07  5.529778e+06| 0:0:00| chol  1↙
2
 3|0.612|0.618|9.0e-03|1.1e-01|1.1e+08| 5.101314e+07  4.267412e+06| 0:0:00| chol  1↙
```

```
1
 4|0.718|0.733|2.5e-03|2.8e-02|5.5e+07| 3.462934e+07  1.906796e+06| 0:0:00| chol  2↙
2
 5|1.000|0.859|2.3e-09|4.0e-03|2.0e+07| 1.326700e+07  1.488132e+05| 0:0:00| chol  2↙
2
 6|0.983|0.933|3.3e-10|2.7e-04|1.4e+06| 9.547527e+05  6.333156e+03| 0:0:00| chol  2↙
2
 7|0.791|0.823|4.5e-10|4.7e-05|4.1e+05| 3.366777e+05 -1.281356e+03| 0:0:00| chol  2↙
1
 8|0.991|0.809|7.8e-11|9.1e-06|1.3e+05| 1.182141e+05 -3.957958e+03| 0:0:00| chol  1↙
2
 9|0.727|0.986|2.7e-10|4.6e-07|6.6e+04| 6.057493e+04 -3.796792e+03| 0:0:00| chol  1↙
2
10|0.723|1.000|2.0e-10|2.1e-07|3.5e+04| 3.193859e+04 -3.069164e+03| 0:0:00| chol  2↙
2
11|1.000|0.983|3.6e-10|1.1e-07|1.2e+04| 1.056485e+04 -1.751390e+03| 0:0:00| chol  1↙
2
12|0.755|1.000|5.4e-11|5.3e-08|6.0e+03| 4.278237e+03 -1.669014e+03| 0:0:00| chol  2↙
2
13|1.000|0.944|8.8e-11|2.8e-08|2.1e+03| 1.058005e+03 -1.052507e+03| 0:0:00| chol  2↙
1
14|0.892|1.000|1.3e-10|1.3e-08|6.6e+02|-3.357506e+02 -9.909182e+02| 0:0:00| chol  2↙
2
15|1.000|0.990|6.3e-11|6.7e-09|2.2e+02|-7.099670e+02 -9.284248e+02| 0:0:00| chol  2↙
2
16|0.895|1.000|8.4e-11|3.3e-09|3.2e+01|-8.916059e+02 -9.235175e+02| 0:0:00| chol  2↙
2
17|1.000|0.857|1.4e-09|1.9e-09|9.8e+00|-9.117861e+02 -9.214963e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|2.3e-10|8.5e-10|2.9e+00|-9.183259e+02 -9.211823e+02| 0:0:00| chol  1↙
2
19|1.000|1.000|2.4e-09|4.5e-10|9.8e-01|-9.201671e+02 -9.211263e+02| 0:0:00| chol  2↙
2
20|0.910|0.953|4.5e-10|1.2e-10|1.3e-01|-9.210075e+02 -9.211265e+02| 0:0:00| chol  3↙
3
21|1.000|0.929|1.6e-09|1.9e-11|6.8e-03|-9.211214e+02 -9.211271e+02| 0:0:00| chol  2↙
3
22|0.937|0.928|3.3e-09|3.0e-12|1.0e-03|-9.211262e+02 -9.211271e+02| 0:0:00| chol  3↙
3
23|1.000|0.944|2.6e-09|5.8e-13|2.6e-04|-9.211268e+02 -9.211271e+02| 0:0:00| chol  6↙
14
24|0.771|0.970|1.9e-09|1.1e-13|5.9e-05|-9.211270e+02 -9.211271e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 24
 primal objective value = -9.21127021e+02
 dual   objective value = -9.21127073e+02
 gap := trace(XZ)       = 5.90e-05
 relative gap           = 3.20e-08
 actual relative gap    = 2.80e-08
 rel. primal infeas     = 1.91e-09
 rel. dual   infeas     = 1.11e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.1e+06, 3.6e+04
```

```
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.3e-09  0.0e+00  1.6e-13  0.0e+00  2.8e-08  3.2e-08
------------------------------------------------------------------

ans =

  921.1271

Epoch... 207
Epoch... 208

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.0e+09| 9.362957e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.936|0.933|6.4e-02|7.5e-01|3.5e+08| 8.271581e+07  5.907240e+06| 0:0:00| chol  1↙
1
 2|0.634|0.629|2.3e-02|2.8e-01|1.8e+08| 6.491336e+07  5.532739e+06| 0:0:00| chol  1↙
2
 3|0.611|0.618|9.1e-03|1.1e-01|1.1e+08| 5.071248e+07  4.271541e+06| 0:0:00| chol  1↙
1
 4|0.717|0.733|2.6e-03|2.8e-02|5.5e+07| 3.445254e+07  1.912122e+06| 0:0:00| chol  2↙
2
 5|1.000|0.858|2.3e-09|4.0e-03|2.0e+07| 1.322742e+07  1.521934e+05| 0:0:00| chol  2↙
2
 6|0.983|0.933|3.2e-10|2.7e-04|1.4e+06| 9.531121e+05  6.599533e+03| 0:0:00| chol  2↙
2
 7|0.792|0.823|4.4e-10|4.8e-05|4.1e+05| 3.359040e+05 -1.201302e+03| 0:0:00| chol  1↙
2
 8|0.990|0.805|6.8e-11|9.5e-06|1.3e+05| 1.184044e+05 -3.905077e+03| 0:0:00| chol  1↙
2
 9|0.723|0.979|2.7e-10|5.0e-07|6.7e+04| 6.124600e+04 -3.796617e+03| 0:0:00| chol  1↙
2
10|0.723|1.000|2.2e-10|2.1e-07|3.6e+04| 3.228379e+04 -3.083191e+03| 0:0:00| chol  2↙
1
11|1.000|0.984|3.7e-10|1.1e-07|1.3e+04| 1.070226e+04 -1.760645e+03| 0:0:00| chol  2↙
2
12|0.754|1.000|5.9e-11|5.3e-08|6.0e+03| 4.347825e+03 -1.677828e+03| 0:0:00| chol  2↙
1
13|1.000|0.944|5.1e-11|2.8e-08|2.1e+03| 1.086534e+03 -1.054352e+03| 0:0:00| chol  1↙
2
14|0.891|1.000|4.9e-11|1.3e-08|6.7e+02|-3.260740e+02 -9.920299e+02| 0:0:00| chol  2↙
2
15|1.000|0.990|2.8e-11|6.7e-09|2.2e+02|-7.062399e+02 -9.284087e+02| 0:0:00| chol  2↙
```

```
2
16|0.894|1.000|8.3e-11|3.3e-09|3.3e+01|-8.908193e+02 -9.234169e+02| 0:0:00| chol  2↙
2
17|1.000|0.859|1.4e-09|1.9e-09|1.0e+01|-9.114724e+02 -9.213596e+02| 0:0:00| chol  2↙
2
18|0.990|1.000|5.0e-10|8.4e-10|3.0e+00|-9.180932e+02 -9.210436e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|5.1e-10|4.3e-10|1.0e+00|-9.199898e+02 -9.209846e+02| 0:0:00| chol  2↙
2
20|0.904|0.965|6.6e-10|8.3e-11|1.4e-01|-9.208530e+02 -9.209848e+02| 0:0:00| chol  3↙
3
21|1.000|0.936|4.1e-10|2.7e-11|1.4e-02|-9.209729e+02 -9.209851e+02| 0:0:00| chol  1↙
2
22|0.940|0.946|1.5e-09|3.3e-12|1.1e-03|-9.209840e+02 -9.209849e+02| 0:0:00| chol  4↙
3
23|0.997|0.944|4.5e-10|5.6e-13|2.4e-04|-9.209847e+02 -9.209849e+02| 0:0:00| chol  7↙
19
24|1.000|0.962|9.2e-09|6.7e-14|2.9e-05|-9.209849e+02 -9.209849e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 24
 primal objective value = -9.20984917e+02
 dual   objective value = -9.20984931e+02
 gap := trace(XZ)       = 2.87e-05
 relative gap           = 1.56e-08
 actual relative gap    = 7.31e-09
 rel. primal infeas     = 9.21e-09
 rel. dual   infeas     = 6.71e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.6e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.6e-08  0.0e+00  9.5e-14  0.0e+00  7.3e-09  1.6e-08
------------------------------------------------------------------------

ans =

  920.9849

Epoch... 209
Epoch... 210

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.8e+09| 8.778577e+07  0.000000e+00| 0:0:00| chol  1↙
```

```
2
 1|0.936|0.933|6.4e-02|7.9e-01|3.4e+08| 7.787866e+07  6.221867e+06| 0:0:00| chol  1↙
1
 2|0.628|0.625|2.4e-02|3.0e-01|1.8e+08| 6.139806e+07  5.838959e+06| 0:0:00| chol  1↙
1
 3|0.604|0.612|9.4e-03|1.1e-01|1.0e+08| 4.830265e+07  4.547458e+06| 0:0:00| chol  1↙
2
 4|0.705|0.726|2.8e-03|3.1e-02|5.3e+07| 3.329409e+07  2.107671e+06| 0:0:00| chol  2↙
1
 5|1.000|0.846|9.6e-10|4.8e-03|2.0e+07| 1.326531e+07  2.259254e+05| 0:0:00| chol  2↙
2
 6|0.984|0.927|3.2e-10|3.6e-04|1.4e+06| 9.747191e+05  1.317620e+04| 0:0:00| chol  2↙
2
 7|0.835|0.818|8.3e-10|6.5e-05|3.8e+05| 3.109618e+05  6.453190e+02| 0:0:00| chol  2↙
1
 8|0.968|0.731|1.3e-10|1.8e-05|1.3e+05| 1.156312e+05 -2.500539e+03| 0:0:00| chol  2↙
2
 9|0.614|0.819|2.7e-10|3.3e-06|7.8e+04| 7.158595e+04 -3.355371e+03| 0:0:00| chol  2↙
2
10|0.659|1.000|5.1e-10|2.1e-07|4.6e+04| 4.160351e+04 -3.372436e+03| 0:0:00| chol  2↙
2
11|1.000|0.929|5.3e-10|1.1e-07|1.7e+04| 1.509931e+04 -2.109561e+03| 0:0:00| chol  2↙
2
12|0.754|1.000|6.2e-11|5.3e-08|8.6e+03| 6.624285e+03 -1.926415e+03| 0:0:00| chol  2↙
2
13|1.000|0.928|6.2e-11|2.8e-08|3.2e+03| 2.050484e+03 -1.107595e+03| 0:0:00| chol  2↙
1
14|0.869|1.000|2.3e-10|1.3e-08|1.1e+03| 5.132058e+01 -1.022037e+03| 0:0:00| chol  1↙
2
15|1.000|0.981|1.1e-10|6.7e-09|3.6e+02|-5.494170e+02 -9.130411e+02| 0:0:00| chol  2↙
2
16|0.886|1.000|1.4e-10|3.3e-09|6.7e+01|-8.378311e+02 -9.042503e+02| 0:0:00| chol  2↙
2
17|1.000|0.918|1.3e-09|1.8e-09|2.0e+01|-8.803122e+02 -9.000196e+02| 0:0:00| chol  2↙
2
18|0.785|1.000|2.2e-09|8.6e-10|5.8e+00|-8.936449e+02 -8.994401e+02| 0:0:00| chol  2↙
2
19|1.000|0.920|3.3e-09|5.1e-10|2.2e+00|-8.970330e+02 -8.992066e+02| 0:0:00| chol  2↙
2
20|0.868|1.000|1.7e-11|1.3e-10|4.5e-01|-8.987618e+02 -8.992066e+02| 0:0:00| chol  2↙
2
21|1.000|0.912|8.5e-10|1.9e-11|5.6e-02|-8.991382e+02 -8.991933e+02| 0:0:00| chol  2↙
2
22|0.982|0.975|6.5e-10|2.3e-12|1.1e-03|-8.991904e+02 -8.991914e+02| 0:0:00| chol  3↙
3
23|0.984|0.985|4.0e-10|6.5e-14|1.9e-05|-8.991913e+02 -8.991914e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -8.99191347e+02
 dual   objective value = -8.99191363e+02
 gap := trace(XZ)       = 1.94e-05
 relative gap           = 1.08e-08
 actual relative gap    = 9.01e-09
```

```
 rel. primal infeas     = 3.98e-10
 rel. dual   infeas     = 6.46e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.8e+05, 9.8e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.8e-10  0.0e+00  9.1e-14  0.0e+00  9.0e-09  1.1e-08
------------------------------------------------------------------

ans =

  899.1914

Epoch... 211
Epoch... 212

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.7e+09| 8.432658e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.6e-01|3.2e+08| 7.505629e+07  6.050887e+06| 0:0:00| chol  1↙
1
 2|0.629|0.625|2.3e-02|2.9e-01|1.7e+08| 5.895104e+07  5.672763e+06| 0:0:00| chol  1↙
1
 3|0.604|0.612|9.3e-03|1.1e-01|9.8e+07| 4.631270e+07  4.411801e+06| 0:0:00| chol  1↙
2
 4|0.705|0.726|2.7e-03|3.0e-02|5.1e+07| 3.188276e+07  2.033831e+06| 0:0:00| chol  2↙
2
 5|1.000|0.846|2.2e-09|4.7e-03|1.9e+07| 1.265872e+07  2.153920e+05| 0:0:00| chol  2↙
2
 6|0.983|0.931|1.3e-09|3.2e-04|1.4e+06| 9.330006e+05  1.147222e+04| 0:0:00| chol  2↙
2
 7|0.809|0.812|1.2e-09|6.1e-05|4.0e+05| 3.284335e+05  3.068955e+02| 0:0:00| chol  2↙
1
 8|0.984|0.758|9.8e-11|1.5e-05|1.3e+05| 1.173642e+05 -3.038350e+03| 0:0:00| chol  2↙
1
 9|0.662|0.832|5.4e-10|2.6e-06|7.5e+04| 6.839084e+04 -3.611334e+03| 0:0:00| chol  2↙
2
10|0.822|0.688|9.4e-10|8.6e-07|3.9e+04| 3.500709e+04 -3.533543e+03| 0:0:00| chol  2↙
2
11|0.456|0.302|4.8e-10|6.2e-07|3.2e+04| 2.966519e+04 -2.030561e+03| 0:0:00| chol  2↙
2
12|0.452|1.000|2.7e-10|5.3e-08|2.5e+04| 2.038838e+04 -4.700054e+03| 0:0:00| chol  1↙
1
13|0.938|1.000|9.6e-11|2.6e-08|9.4e+03| 7.370091e+03 -2.025556e+03| 0:0:00| chol  1↙
```

```
1
14|1.000|0.908|5.6e-11|1.4e-08|2.7e+03| 1.483993e+03 -1.165406e+03| 0:0:00| chol  2↙
2
15|0.999|1.000|2.4e-10|6.6e-09|8.7e+02|-1.732338e+02 -1.043427e+03| 0:0:00| chol  1↙
2
16|1.000|1.000|1.5e-11|3.3e-09|2.9e+02|-6.705377e+02 -9.613920e+02| 0:0:00| chol  2↙
2
17|0.900|1.000|1.5e-10|1.7e-09|4.8e+01|-9.057539e+02 -9.536419e+02| 0:0:00| chol  1↙
1
18|1.000|0.902|5.2e-10|9.1e-10|1.4e+01|-9.371759e+02 -9.506303e+02| 0:0:00| chol  2↙
2
19|0.842|1.000|7.8e-10|4.2e-10|4.7e+00|-9.455304e+02 -9.501702e+02| 0:0:00| chol  1↙
2
20|1.000|1.000|2.2e-10|5.1e-11|1.6e+00|-9.484159e+02 -9.500344e+02| 0:0:00| chol  2↙
2
21|0.916|0.993|2.5e-09|2.0e-11|2.0e-01|-9.498036e+02 -9.500007e+02| 0:0:00| chol  3↙
3
22|0.985|0.947|2.5e-09|1.0e-11|5.4e-03|-9.499928e+02 -9.499976e+02| 0:0:00| chol  3↙
3
23|0.982|0.982|1.6e-09|3.5e-13|1.1e-04|-9.499974e+02 -9.499975e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.49997368e+02
 dual   objective value = -9.49997455e+02
 gap := trace(XZ)       = 1.05e-04
 relative gap           = 5.53e-08
 actual relative gap    = 4.57e-08
 rel. primal infeas     = 1.57e-09
 rel. dual   infeas     = 3.47e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.8e+05, 9.7e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.7e-09  0.0e+00  4.9e-13  0.0e+00  4.6e-08  5.5e-08
-------------------------------------------------------------------

ans =

  949.9975

Epoch... 213
Epoch... 214

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.6e+09| 8.151522e+07  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.937|0.934|6.3e-02|7.6e-01|3.1e+08| 7.273117e+07  5.977019e+06| 0:0:00| chol  1↙
1
 2|0.628|0.624|2.3e-02|2.8e-01|1.6e+08| 5.710459e+07  5.601675e+06| 0:0:00| chol  1↙
2
 3|0.603|0.611|9.3e-03|1.1e-01|9.5e+07| 4.488235e+07  4.356614e+06| 0:0:00| chol  1↙
1
 4|0.704|0.726|2.7e-03|3.0e-02|4.9e+07| 3.093031e+07  2.009997e+06| 0:0:00| chol  2↙
2
 5|1.000|0.845|1.7e-09|4.7e-03|1.8e+07| 1.230555e+07  2.177517e+05| 0:0:00| chol  2↙
2
 6|0.983|0.931|3.1e-10|3.2e-04|1.3e+06| 9.133505e+05  1.169118e+04| 0:0:00| chol  2↙
2
 7|0.805|0.810|9.8e-10|6.2e-05|4.0e+05| 3.281065e+05  4.514527e+02| 0:0:00| chol  1↙
1
 8|0.983|0.757|9.3e-11|1.5e-05|1.3e+05| 1.178168e+05 -2.987296e+03| 0:0:00| chol  1↙
2
 9|0.667|0.820|7.6e-10|2.8e-06|7.5e+04| 6.850852e+04 -3.622868e+03| 0:0:00| chol  2↙
2
10|0.972|0.547|1.4e-09|1.3e-06|3.5e+04| 3.009320e+04 -3.561181e+03| 0:0:00| chol  2↙
2
11|0.409|0.319|7.4e-10|9.1e-07|2.9e+04| 2.662310e+04 -1.747959e+03| 0:0:00| chol  2↙
2
12|0.531|1.000|3.4e-10|5.3e-08|2.1e+04| 1.713176e+04 -3.376076e+03| 0:0:00| chol  1↙
2
13|0.931|1.000|6.4e-11|2.6e-08|7.1e+03| 5.370418e+03 -1.764861e+03| 0:0:00| chol  2↙
1
14|1.000|0.920|5.9e-11|1.4e-08|2.2e+03| 1.031432e+03 -1.140571e+03| 0:0:00| chol  1↙
2
15|0.884|1.000|5.2e-11|6.6e-09|7.9e+02|-2.873902e+02 -1.075034e+03| 0:0:00| chol  2↙
2
16|1.000|1.000|1.0e-10|3.3e-09|2.7e+02|-7.283626e+02 -9.964673e+02| 0:0:00| chol  1↙
1
17|0.894|1.000|1.3e-10|1.7e-09|4.2e+01|-9.482358e+02 -9.899789e+02| 0:0:00| chol  2↙
2
18|1.000|0.880|1.2e-09|9.5e-10|1.2e+01|-9.751421e+02 -9.873593e+02| 0:0:00| chol  2↙
2
19|0.918|1.000|1.2e-09|4.5e-10|4.1e+00|-9.828630e+02 -9.869200e+02| 0:0:00| chol  2↙
2
20|1.000|1.000|3.5e-09|9.3e-11|1.4e+00|-9.854374e+02 -9.868112e+02| 0:0:00| chol  2↙
2
21|0.946|0.962|9.7e-10|8.6e-11|1.1e-01|-9.866779e+02 -9.867792e+02| 0:0:00| chol  3↙
3
22|0.982|0.983|3.2e-10|4.8e-12|2.1e-03|-9.867760e+02 -9.867778e+02| 0:0:00| chol  3↙
3
23|0.987|0.989|1.7e-10|1.0e-13|3.0e-05|-9.867778e+02 -9.867778e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.86777751e+02
 dual   objective value = -9.86777776e+02
 gap := trace(XZ)       = 2.97e-05
```

```
 relative gap           = 1.50e-08
 actual relative gap    = 1.26e-08
 rel. primal infeas     = 1.65e-10
 rel. dual   infeas     = 1.01e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.7e+05, 9.5e+05, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.9e-10  0.0e+00  1.4e-13  0.0e+00  1.3e-08  1.5e-08
------------------------------------------------------------------

ans =

  986.7778

Epoch... 215
Epoch... 216

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|3.9e+09| 1.264270e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.934|6.3e-02|7.5e-01|4.7e+08| 1.097676e+08  5.945707e+06| 0:0:00| chol  1↙
1
 2|0.647|0.642|2.2e-02|2.7e-01|2.4e+08| 8.536825e+07  5.543296e+06| 0:0:00| chol  1↙
1
 3|0.631|0.634|8.2e-03|9.9e-02|1.4e+08| 6.547264e+07  4.180130e+06| 0:0:00| chol  2↙
2
 4|0.753|0.751|2.0e-03|2.5e-02|7.3e+07| 4.263952e+07  1.689045e+06| 0:0:00| chol  2↙
2
 5|1.000|0.899|7.4e-10|2.5e-03|2.4e+07| 1.612996e+07 -2.050951e+04| 0:0:00| chol  2↙
1
 6|0.985|0.948|2.1e-10|1.3e-04|1.6e+06| 1.116586e+06 -5.464008e+03| 0:0:00| chol  2↙
2
 7|0.804|0.866|2.0e-09|1.8e-05|4.7e+05| 3.904032e+05 -5.396103e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|5.1e-11|8.4e-07|1.2e+05| 1.108565e+05 -6.118081e+03| 0:0:00| chol  1↙
1
 9|0.766|0.736|3.3e-10|5.3e-07|3.8e+04| 3.294882e+04 -3.838848e+03| 0:0:00| chol  2↙
2
10|0.873|1.000|4.4e-10|2.1e-07|2.1e+04| 1.784937e+04 -2.567743e+03| 0:0:00| chol  2↙
2
11|1.000|0.854|3.8e-10|1.2e-07|8.5e+03| 6.807611e+03 -1.618567e+03| 0:0:00| chol  2↙
2
12|0.786|1.000|8.2e-11|5.3e-08|3.9e+03| 2.413236e+03 -1.451069e+03| 0:0:00| chol  2↙
```

```
2
13|1.000|0.942|8.6e-11|2.8e-08|1.4e+03| 3.938291e+02 -1.051240e+03| 0:0:00| chol  1↙
1
14|0.870|1.000|3.8e-11|1.3e-08|4.2e+02|-5.972198e+02 -1.013846e+03| 0:0:00| chol  1↙
2
15|1.000|0.969|1.6e-10|6.8e-09|1.4e+02|-8.374348e+02 -9.771722e+02| 0:0:00| chol  1↙
1
16|0.899|1.000|2.0e-10|3.3e-09|1.7e+01|-9.575751e+02 -9.741993e+02| 0:0:00| chol  2↙
2
17|1.000|0.804|2.6e-09|2.0e-09|6.2e+00|-9.669447e+02 -9.730614e+02| 0:0:00| chol  2↙
2
18|0.981|1.000|1.0e-10|8.5e-10|2.0e+00|-9.708794e+02 -9.728776e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|1.9e-09|4.3e-10|6.3e-01|-9.722315e+02 -9.728387e+02| 0:0:00| chol  2↙
2
20|0.968|0.968|2.0e-09|8.4e-11|2.4e-02|-9.728227e+02 -9.728424e+02| 0:0:00| chol  3↙
3
21|0.988|0.988|8.0e-11|1.6e-12|3.3e-04|-9.728446e+02 -9.728449e+02| 0:0:00| chol  5↙
5
22|0.972|0.989|4.2e-10|3.2e-14|9.0e-06|-9.728449e+02 -9.728449e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.72844889e+02
 dual   objective value = -9.72844896e+02
 gap := trace(XZ)       = 8.95e-06
 relative gap           = 4.60e-09
 actual relative gap    = 3.36e-09
 rel. primal infeas     = 4.23e-10
 rel. dual   infeas     = 3.17e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.7e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 5.8e-10  0.0e+00  4.5e-14  0.0e+00  3.4e-09  4.6e-09
-----------------------------------------------------------------

ans =

  972.8449

Epoch... 217
Epoch... 218

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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+01|3.2e+09| 1.034129e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.937|0.935|6.3e-02|7.4e-01|3.9e+08| 9.081315e+07  5.894409e+06| 0:0:00| chol  1↙
1
 2|0.639|0.634|2.3e-02|2.7e-01|2.0e+08| 7.083678e+07  5.507508e+06| 0:0:00| chol  1↙
1
 3|0.618|0.623|8.6e-03|1.0e-01|1.1e+08| 5.493977e+07  4.214716e+06| 0:0:00| chol  1↙
1
 4|0.730|0.739|2.3e-03|2.7e-02|5.8e+07| 3.678282e+07  1.819147e+06| 0:0:00| chol  2↙
2
 5|1.000|0.870|4.8e-09|3.5e-03|2.0e+07| 1.355615e+07  9.814407e+04| 0:0:00| chol  2↙
2
 6|0.983|0.939|4.9e-10|2.1e-04|1.4e+06| 9.624257e+05  1.929619e+03| 0:0:00| chol  2↙
2
 7|0.771|0.829|1.8e-09|3.7e-05|4.3e+05| 3.555679e+05 -2.773078e+03| 0:0:00| chol  2↙
1
 8|1.000|0.890|5.7e-11|4.2e-06|1.3e+05| 1.185393e+05 -4.959851e+03| 0:0:00| chol  2↙
2
 9|0.708|1.000|3.7e-10|4.2e-07|6.2e+04| 5.704033e+04 -3.954597e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|2.8e-10|2.1e-07|2.2e+04| 1.960114e+04 -2.483716e+03| 0:0:00| chol  2↙
2
11|0.933|1.000|4.3e-10|1.1e-07|8.9e+03| 6.906263e+03 -1.928534e+03| 0:0:00| chol  2↙
2
12|1.000|0.924|1.1e-10|5.7e-08|3.4e+03| 2.158584e+03 -1.179392e+03| 0:0:00| chol  2↙
2
13|0.858|1.000|5.3e-11|2.6e-08|1.2e+03| 8.432958e+01 -1.099030e+03| 0:0:00| chol  1↙
2
14|1.000|0.975|8.4e-11|1.4e-08|4.1e+02|-5.663106e+02 -9.779663e+02| 0:0:00| chol  2↙
2
15|0.884|1.000|7.4e-11|6.6e-09|7.6e+01|-8.930534e+02 -9.681861e+02| 0:0:00| chol  2↙
2
16|1.000|0.923|7.7e-11|3.6e-09|2.2e+01|-9.413509e+02 -9.636165e+02| 0:0:00| chol  2↙
2
17|0.783|1.000|1.3e-09|1.7e-09|6.4e+00|-9.567526e+02 -9.630309e+02| 0:0:00| chol  2↙
2
18|1.000|0.878|2.2e-09|9.5e-10|2.5e+00|-9.603505e+02 -9.627926e+02| 0:0:00| chol  2↙
2
19|0.849|1.000|2.3e-09|4.5e-10|5.9e-01|-9.622380e+02 -9.628006e+02| 0:0:00| chol  2↙
2
20|1.000|0.865|2.0e-09|1.5e-10|1.7e-01|-9.626327e+02 -9.627971e+02| 0:0:00| chol  3↙
2
21|0.976|0.977|6.2e-10|1.1e-11|4.6e-03|-9.627931e+02 -9.627971e+02| 0:0:00| chol  2↙
2
22|0.989|0.989|4.5e-11|2.1e-13|5.7e-05|-9.627970e+02 -9.627971e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.62797024e+02
 dual   objective value = -9.62797069e+02
 gap := trace(XZ)       = 5.66e-05
 relative gap           = 2.94e-08
 actual relative gap    = 2.32e-08
```

```
 rel. primal infeas     = 4.47e-11
 rel. dual   infeas     = 2.10e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.7e+05, 1.0e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.8e-11  0.0e+00  3.0e-13  0.0e+00  2.3e-08  2.9e-08
------------------------------------------------------------------

ans =

  962.7971

Epoch... 219
Epoch... 220

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.7e+09| 8.375363e+07  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.939|0.936|6.1e-02|6.9e-01|3.1e+08| 7.466793e+07  5.488315e+06| 0:0:00| chol  2↙
2
 2|0.634|0.630|2.2e-02|2.6e-01|1.6e+08| 5.804865e+07  5.125394e+06| 0:0:00| chol  1↙
2
 3|0.610|0.617|8.7e-03|9.8e-02|9.4e+07| 4.520770e+07  3.944482e+06| 0:0:00| chol  1↙
2
 4|0.718|0.734|2.4e-03|2.6e-02|5.3e+07| 3.064899e+07  1.747353e+06| 0:0:00| chol  1↙
1
 5|1.000|0.867|5.6e-09|3.5e-03|1.9e+07| 1.292064e+07  1.052812e+05| 0:0:00| chol  2↙
2
 6|0.985|0.944|1.1e-09|2.0e-04|1.4e+06| 9.588271e+05  1.736135e+03| 0:0:00| chol  2↙
2
 7|0.788|0.829|3.4e-09|3.4e-05|4.3e+05| 3.589189e+05 -3.122939e+03| 0:0:00| chol  1↙
2
 8|1.000|0.914|5.9e-11|3.2e-06|1.3e+05| 1.166284e+05 -5.240361e+03| 0:0:00| chol  1↙
2
 9|0.718|1.000|6.0e-10|4.2e-07|6.1e+04| 5.594281e+04 -4.125230e+03| 0:0:00| chol  2↙
2
10|1.000|0.896|4.8e-10|2.3e-07|2.3e+04| 2.049469e+04 -2.659212e+03| 0:0:00| chol  1↙
2
11|0.685|1.000|1.4e-10|1.1e-07|1.3e+04| 1.077571e+04 -2.456662e+03| 0:0:00| chol  2↙
2
12|1.000|0.931|1.0e-10|5.6e-08|5.1e+03| 3.782469e+03 -1.338428e+03| 0:0:00| chol  2↙
2
13|0.844|1.000|4.5e-11|2.6e-08|1.9e+03| 6.783868e+02 -1.222131e+03| 0:0:00| chol  1↙
```

```
1
14|1.000|0.972|1.0e-10|1.4e-08|6.5e+02|-3.762222e+02 -1.025678e+03| 0:0:00| chol  2↙
2
15|0.882|1.000|2.7e-10|6.6e-09|1.5e+02|-8.640110e+02 -1.009452e+03| 0:0:00| chol  1↙
2
16|1.000|0.963|3.0e-10|3.4e-09|4.5e+01|-9.545254e+02 -9.997147e+02| 0:0:00| chol  2↙
2
17|0.849|1.000|6.5e-12|1.7e-09|7.6e+00|-9.912535e+02 -9.987282e+02| 0:0:00| chol  2↙
2
18|1.000|0.675|1.1e-09|1.1e-09|3.5e+00|-9.949022e+02 -9.983604e+02| 0:0:00| chol  2↙
2
19|0.803|1.000|1.6e-09|4.1e-10|1.0e+00|-9.973753e+02 -9.983711e+02| 0:0:00| chol  2↙
2
20|1.000|0.757|1.3e-09|1.3e-10|4.2e-01|-9.979092e+02 -9.983204e+02| 0:0:00| chol  2↙
2
21|0.923|1.000|1.1e-11|8.5e-12|3.4e-02|-9.982886e+02 -9.983225e+02| 0:0:00| chol  3↙
3
22|1.000|1.000|9.8e-09|2.2e-12|9.8e-03|-9.983120e+02 -9.983216e+02| 0:0:00| chol  4↙
3
23|0.988|0.987|1.4e-09|2.4e-13|1.3e-04|-9.983213e+02 -9.983214e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.98321320e+02
 dual   objective value = -9.98321441e+02
 gap := trace(XZ)       = 1.34e-04
 relative gap           = 6.69e-08
 actual relative gap    = 6.09e-08
 rel. primal infeas     = 1.37e-09
 rel. dual   infeas     = 2.42e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.4e+05, 9.3e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-09  0.0e+00  3.4e-13  0.0e+00  6.1e-08  6.7e-08
-------------------------------------------------------------------

ans =

  998.3214

Epoch... 221
Epoch... 222

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.4e+09| 7.371369e+07  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.938|0.935|6.2e-02|7.1e-01|2.8e+08| 6.635130e+07  5.658405e+06| 0:0:00| chol  1↙
1
 2|0.628|0.624|2.3e-02|2.7e-01|1.5e+08| 5.193845e+07  5.299410e+06| 0:0:00| chol  1↙
1
 3|0.601|0.609|9.2e-03|1.0e-01|8.6e+07| 4.082302e+07  4.124759e+06| 0:0:00| chol  1↙
2
 4|0.702|0.725|2.7e-03|2.9e-02|4.5e+07| 2.819446e+07  1.910367e+06| 0:0:00| chol  2↙
2
 5|1.000|0.842|9.7e-10|4.6e-03|1.7e+07| 1.128072e+07  2.177960e+05| 0:0:00| chol  2↙
2
 6|0.982|0.933|4.3e-10|3.0e-04|1.2e+06| 8.535966e+05  1.051441e+04| 0:0:00| chol  2↙
2
 7|0.794|0.805|1.3e-09|6.0e-05|3.9e+05| 3.209352e+05 -4.594885e+01| 0:0:00| chol  1↙
2
 8|0.979|0.759|8.6e-11|1.4e-05|1.3e+05| 1.176736e+05 -3.205740e+03| 0:0:00| chol  1↙
2
 9|0.711|0.750|7.6e-10|3.7e-06|7.3e+04| 6.655885e+04 -3.737378e+03| 0:0:00| chol  2↙
2
10|1.000|0.298|1.8e-09|2.6e-06|4.0e+04| 3.470182e+04 -3.293938e+03| 0:0:00| chol  2↙
2
11|0.340|1.000|1.2e-09|1.1e-07|3.0e+04| 2.541629e+04 -4.619509e+03| 0:0:00| chol  2↙
2
12|0.856|1.000|2.0e-10|5.3e-08|1.4e+04| 1.207912e+04 -2.136481e+03| 0:0:00| chol  2↙
2
13|0.960|1.000|6.2e-11|2.6e-08|5.3e+03| 3.823322e+03 -1.457999e+03| 0:0:00| chol  2↙
2
14|1.000|1.000|5.3e-11|1.3e-08|1.9e+03| 8.184386e+02 -1.116336e+03| 0:0:00| chol  1↙
1
15|0.972|1.000|2.1e-11|6.6e-09|4.8e+02|-5.436621e+02 -1.023602e+03| 0:0:00| chol  2↙
2
16|1.000|1.000|1.3e-10|3.3e-09|1.5e+02|-8.371949e+02 -9.909065e+02| 0:0:00| chol  1↙
2
17|0.920|0.990|1.2e-10|1.7e-09|1.7e+01|-9.696195e+02 -9.862287e+02| 0:0:00| chol  2↙
2
18|0.753|0.954|3.0e-12|8.7e-10|8.0e+00|-9.773602e+02 -9.852912e+02| 0:0:00| chol  2↙
2
19|1.000|1.000|2.2e-09|4.1e-10|3.0e+00|-9.820850e+02 -9.851073e+02| 0:0:00| chol  2↙
2
20|0.942|1.000|2.8e-09|4.3e-11|6.3e-01|-9.844145e+02 -9.850390e+02| 0:0:00| chol  3↙
3
21|1.000|1.000|4.0e-09|6.4e-12|1.2e-01|-9.849086e+02 -9.850274e+02| 0:0:00| chol  3↙
2
22|0.981|0.975|1.2e-09|3.5e-12|2.5e-03|-9.850223e+02 -9.850246e+02| 0:0:00| chol  4↙
4
23|0.983|0.987|4.7e-10|1.2e-13|4.5e-05|-9.850244e+02 -9.850245e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -9.85024445e+02
 dual   objective value = -9.85024481e+02
 gap := trace(XZ)       = 4.46e-05
```

```
 relative gap           = 2.26e-08
 actual relative gap    = 1.81e-08
 rel. primal infeas     = 4.75e-10
 rel. dual   infeas     = 1.16e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.5e+05, 9.8e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 9.4e-10  0.0e+00  1.6e-13  0.0e+00  1.8e-08  2.3e-08
------------------------------------------------------------------

ans =

  985.0245

Epoch... 223
Epoch... 224

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.8e+09| 8.945957e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.8e-01|3.3e+08| 7.938248e+07  5.372088e+06| 0:0:00| chol  1↙
1
 2|0.638|0.633|2.2e-02|2.5e-01|1.7e+08| 6.152389e+07  5.009325e+06| 0:0:00| chol  1↙
1
 3|0.616|0.621|8.4e-03|9.4e-02|9.9e+07| 4.766717e+07  3.829737e+06| 0:0:00| chol  1↙
2
 4|0.728|0.739|2.3e-03|2.5e-02|5.5e+07| 3.195536e+07  1.651234e+06| 0:0:00| chol  1↙
1
 5|1.000|0.876|1.2e-09|3.0e-03|2.0e+07| 1.310476e+07  6.447617e+04| 0:0:00| chol  2↙
2
 6|0.984|0.946|3.7e-10|1.6e-04|1.4e+06| 9.599832e+05 -1.105620e+03| 0:0:00| chol  2↙
2
 7|0.787|0.841|1.1e-09|2.6e-05|4.4e+05| 3.653600e+05 -4.222866e+03| 0:0:00| chol  1↙
2
 8|1.000|0.991|6.5e-11|9.1e-07|1.2e+05| 1.134739e+05 -5.766552e+03| 0:0:00| chol  2↙
2
 9|0.695|1.000|5.2e-10|4.2e-07|6.1e+04| 5.499434e+04 -4.293365e+03| 0:0:00| chol  1↙
1
10|1.000|0.951|2.4e-10|2.2e-07|2.0e+04| 1.759361e+04 -2.408848e+03| 0:0:00| chol  2↙
2
11|0.639|1.000|1.1e-10|1.1e-07|1.2e+04| 9.150553e+03 -2.409812e+03| 0:0:00| chol  1↙
2
12|1.000|0.907|9.6e-11|5.8e-08|4.2e+03| 2.852106e+03 -1.293202e+03| 0:0:00| chol  1↙
```

```
2
13|0.876|1.000|5.4e-11|2.6e-08|1.5e+03| 2.869222e+02 -1.161350e+03| 0:0:00| chol  2↙
1
14|1.000|0.989|3.9e-11|1.3e-08|4.9e+02|-5.278994e+02 -1.020411e+03| 0:0:00| chol  2↙
2
15|0.887|1.000|1.2e-10|6.6e-09|9.9e+01|-9.104154e+02 -1.009282e+03| 0:0:00| chol  2↙
2
16|1.000|0.954|5.9e-10|3.5e-09|3.0e+01|-9.737779e+02 -1.003280e+03| 0:0:00| chol  1↙
2
17|0.815|1.000|1.1e-10|1.7e-09|6.3e+00|-9.963700e+02 -1.002621e+03| 0:0:00| chol  2↙
2
18|1.000|0.703|2.0e-09|1.1e-09|2.8e+00|-9.995988e+02 -1.002374e+03| 0:0:00| chol  2↙
2
19|0.832|1.000|9.9e-10|4.4e-10|7.2e-01|-1.001697e+03 -1.002392e+03| 0:0:00| chol  2↙
2
20|1.000|0.837|2.3e-09|1.6e-10|2.7e-01|-1.002111e+03 -1.002369e+03| 0:0:00| chol  2↙
2
21|0.953|0.949|2.0e-09|3.5e-11|1.5e-02|-1.002358e+03 -1.002371e+03| 0:0:00| chol  3↙
3
22|0.957|0.953|2.0e-09|2.8e-12|7.4e-04|-1.002370e+03 -1.002371e+03| 0:0:00| chol  4↙
5
23|0.921|0.912|1.1e-08|5.1e-13|1.6e-04|-1.002371e+03 -1.002371e+03| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -1.00237092e+03
 dual   objective value = -1.00237106e+03
 gap := trace(XZ)       = 1.60e-04
 relative gap           = 7.96e-08
 actual relative gap    = 7.06e-08
 rel. primal infeas     = 1.12e-08
 rel. dual   infeas     = 5.06e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.3e+05, 9.7e+05, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.8e-08  0.0e+00  7.2e-13  0.0e+00  7.1e-08  8.0e-08
-------------------------------------------------------------------

ans =

   1.0024e+03

Epoch... 225
Epoch... 226

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+01|2.8e+09| 8.944069e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.7e-01|3.3e+08| 7.937462e+07  5.322906e+06| 0:0:00| chol  1↙
1
 2|0.638|0.634|2.2e-02|2.4e-01|1.7e+08| 6.147838e+07  4.962182e+06| 0:0:00| chol  1↙
1
 3|0.616|0.622|8.4e-03|9.3e-02|9.9e+07| 4.759815e+07  3.790688e+06| 0:0:00| chol  1↙
1
 4|0.729|0.739|2.3e-03|2.4e-02|5.5e+07| 3.186608e+07  1.629183e+06| 0:0:00| chol  2↙
2
 5|1.000|0.877|9.6e-10|3.0e-03|1.9e+07| 1.302490e+07  5.972421e+04| 0:0:00| chol  2↙
2
 6|0.984|0.946|3.2e-10|1.6e-04|1.4e+06| 9.548054e+05 -1.517398e+03| 0:0:00| chol  2↙
2
 7|0.788|0.844|8.9e-10|2.5e-05|4.4e+05| 3.647190e+05 -4.409541e+03| 0:0:00| chol  1↙
2
 8|1.000|0.999|7.5e-11|8.5e-07|1.2e+05| 1.126510e+05 -5.819267e+03| 0:0:00| chol  1↙
2
 9|0.691|1.000|4.4e-10|4.2e-07|6.1e+04| 5.532477e+04 -4.376587e+03| 0:0:00| chol  1↙
2
10|1.000|0.945|2.3e-10|2.2e-07|2.0e+04| 1.736629e+04 -2.416036e+03| 0:0:00| chol  2↙
2
11|0.639|1.000|1.0e-10|1.1e-07|1.1e+04| 8.978393e+03 -2.399057e+03| 0:0:00| chol  1↙
2
12|1.000|0.904|9.5e-11|5.8e-08|4.1e+03| 2.772580e+03 -1.286568e+03| 0:0:00| chol  2↙
2
13|0.880|1.000|1.3e-10|2.6e-08|1.4e+03| 2.586675e+02 -1.153780e+03| 0:0:00| chol  2↙
2
14|1.000|0.991|1.1e-10|1.3e-08|4.8e+02|-5.372125e+02 -1.017580e+03| 0:0:00| chol  1↙
1
15|0.888|1.000|1.9e-10|6.6e-09|9.5e+01|-9.123200e+02 -1.006915e+03| 0:0:00| chol  2↙
2
16|1.000|0.954|3.9e-10|3.5e-09|2.8e+01|-9.733216e+02 -1.001321e+03| 0:0:00| chol  2↙
2
17|0.816|1.000|1.3e-10|1.7e-09|6.0e+00|-9.948498e+02 -1.000720e+03| 0:0:00| chol  2↙
2
18|1.000|0.702|7.9e-09|1.1e-09|2.7e+00|-9.979150e+02 -1.000503e+03| 0:0:00| chol  2↙
2
19|0.834|1.000|1.2e-10|4.5e-10|6.5e-01|-9.998965e+02 -1.000523e+03| 0:0:00| chol  2↙
2
20|1.000|0.832|6.4e-09|1.3e-10|2.4e-01|-1.000277e+03 -1.000507e+03| 0:0:00| chol  2↙
2
21|0.945|0.966|1.8e-10|3.3e-11|1.5e-02|-1.000497e+03 -1.000510e+03| 0:0:00| chol  3↙
3
22|0.983|0.970|3.7e-10|1.5e-12|3.6e-04|-1.000510e+03 -1.000511e+03| 0:0:00| chol  3↙
3
23|0.979|0.988|6.4e-10|3.0e-14|7.3e-06|-1.000511e+03 -1.000511e+03| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -1.00051057e+03
```

```
 dual   objective value = -1.00051057e+03
 gap := trace(XZ)       = 7.28e-06
 relative gap           = 3.64e-09
 actual relative gap    = 3.32e-09
 rel. primal infeas     = 6.37e-10
 rel. dual   infeas     = 3.01e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.2e+05, 9.7e+05, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.0e-09  0.0e+00  4.3e-14  0.0e+00  3.3e-09  3.6e-09
------------------------------------------------------------------

ans =

   1.0005e+03

Epoch... 227
Epoch... 228

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.0e+09| 9.538977e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.939|0.936|6.1e-02|6.5e-01|3.5e+08| 8.426349e+07  5.177397e+06| 0:0:00| chol  1↙
1
 2|0.642|0.637|2.2e-02|2.4e-01|1.8e+08| 6.527810e+07  4.824507e+06| 0:0:00| chol  1↙
1
 3|0.622|0.627|8.2e-03|8.8e-02|1.0e+08| 5.032470e+07  3.665263e+06| 0:0:00| chol  1↙
2
 4|0.738|0.744|2.2e-03|2.3e-02|5.8e+07| 3.332254e+07  1.537847e+06| 0:0:00| chol  2↙
2
 5|1.000|0.886|6.4e-10|2.6e-03|2.0e+07| 1.323625e+07  2.603495e+04| 0:0:00| chol  2↙
2
 6|0.984|0.947|1.2e-09|1.4e-04|1.4e+06| 9.528236e+05 -3.100506e+03| 0:0:00| chol  2↙
2
 7|0.782|0.856|4.7e-10|2.0e-05|4.4e+05| 3.718489e+05 -4.881748e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|8.4e-11|8.4e-07|1.2e+05| 1.083503e+05 -5.913962e+03| 0:0:00| chol  2↙
2
 9|0.795|0.819|3.8e-10|5.0e-07|3.8e+04| 3.372190e+04 -3.679015e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|2.0e-10|2.1e-07|1.9e+04| 1.603060e+04 -2.363430e+03| 0:0:00| chol  1↙
1
11|1.000|0.976|8.4e-11|1.1e-07|5.2e+03| 3.778160e+03 -1.367284e+03| 0:0:00| chol  2↙
```

```
2
12|1.000|1.000|1.6e-10|5.3e-08|2.0e+03| 8.103593e+02 -1.190344e+03| 0:0:00| chol  1↙
1
13|1.000|0.950|8.6e-11|2.8e-08|6.2e+02|-3.740504e+02 -9.898977e+02| 0:0:00| chol  2↙
2
14|0.883|1.000|1.0e-10|1.3e-08|1.5e+02|-8.202310e+02 -9.737498e+02| 0:0:00| chol  2↙
2
15|1.000|0.993|2.1e-10|6.7e-09|4.9e+01|-9.153102e+02 -9.637480e+02| 0:0:00| chol  2↙
2
16|0.876|1.000|1.9e-10|3.3e-09|6.5e+00|-9.566249e+02 -9.629234e+02| 0:0:00| chol  2↙
2
17|1.000|0.713|1.1e-08|2.2e-09|3.0e+00|-9.597961e+02 -9.626744e+02| 0:0:00| chol  2↙
2
18|0.785|1.000|2.0e-09|8.8e-10|9.3e-01|-9.618347e+02 -9.627138e+02| 0:0:00| chol  2↙
2
19|1.000|0.865|2.4e-09|5.6e-10|3.4e-01|-9.623857e+02 -9.626967e+02| 0:0:00| chol  2↙
2
20|0.979|0.968|1.6e-09|7.2e-11|8.9e-03|-9.627131e+02 -9.627179e+02| 0:0:00| chol  3↙
3
21|0.982|0.990|3.5e-10|1.0e-12|1.7e-04|-9.627209e+02 -9.627210e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.62720896e+02
 dual   objective value = -9.62721010e+02
 gap := trace(XZ)       = 1.72e-04
 relative gap           = 8.94e-08
 actual relative gap    = 5.91e-08
 rel. primal infeas     = 3.47e-10
 rel. dual   infeas     = 1.02e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.1e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.2e-10  0.0e+00  1.4e-12  0.0e+00  5.9e-08  8.9e-08
-----------------------------------------------------------------

ans =

  962.7210

Epoch... 229
Epoch... 230

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|3.2e+09| 1.028943e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.939|0.937|6.1e-02|6.4e-01|3.8e+08| 9.046298e+07  5.116701e+06| 0:0:00| chol  1↙
1
 2|0.647|0.641|2.1e-02|2.3e-01|1.9e+08| 6.983980e+07  4.760633e+06| 0:0:00| chol  1↙
1
 3|0.628|0.631|8.0e-03|8.5e-02|1.1e+08| 5.352041e+07  3.589821e+06| 0:0:00| chol  1↙
2
 4|0.750|0.750|2.0e-03|2.1e-02|6.0e+07| 3.495997e+07  1.457319e+06| 0:0:00| chol  2↙
2
 5|1.000|0.896|2.2e-09|2.2e-03|2.0e+07| 1.335915e+07 -6.040774e+03| 0:0:00| chol  2↙
2
 6|0.984|0.950|5.1e-10|1.1e-04|1.4e+06| 9.453440e+05 -4.749278e+03| 0:0:00| chol  2↙
2
 7|0.788|0.874|3.6e-10|1.4e-05|4.4e+05| 3.734255e+05 -5.557202e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|6.7e-11|8.4e-07|1.1e+05| 9.747832e+04 -5.964391e+03| 0:0:00| chol  1↙
2
 9|0.760|0.738|2.9e-10|5.3e-07|3.5e+04| 3.015455e+04 -3.626094e+03| 0:0:00| chol  1↙
2
10|0.916|1.000|3.8e-10|2.1e-07|1.8e+04| 1.568349e+04 -2.378559e+03| 0:0:00| chol  1↙
2
11|1.000|0.865|3.2e-10|1.2e-07|7.4e+03| 5.811850e+03 -1.507367e+03| 0:0:00| chol  2↙
2
12|0.796|1.000|5.8e-11|5.3e-08|3.3e+03| 1.921297e+03 -1.366888e+03| 0:0:00| chol  2↙
2
13|1.000|0.942|9.2e-11|2.8e-08|1.2e+03| 2.035666e+02 -1.020596e+03| 0:0:00| chol  2↙
2
14|0.871|1.000|2.1e-11|1.3e-08|3.4e+02|-6.508535e+02 -9.882372e+02| 0:0:00| chol  1↙
2
15|1.000|0.971|4.4e-11|6.8e-09|1.1e+02|-8.481614e+02 -9.605589e+02| 0:0:00| chol  1↙
2
16|0.913|1.000|5.3e-10|3.3e-09|1.1e+01|-9.475004e+02 -9.585646e+02| 0:0:00| chol  2↙
2
17|0.975|0.835|4.5e-09|1.9e-09|4.2e+00|-9.539362e+02 -9.579769e+02| 0:0:00| chol  2↙
2
18|1.000|0.894|2.1e-09|9.5e-10|1.5e+00|-9.564524e+02 -9.579194e+02| 0:0:00| chol  2↙
2
19|0.886|1.000|4.4e-09|4.3e-10|2.3e-01|-9.577383e+02 -9.579409e+02| 0:0:00| chol  3↙
3
20|1.000|0.970|1.8e-08|8.4e-11|5.3e-02|-9.579092e+02 -9.579576e+02| 0:0:00| chol  3↙
3
21|0.978|0.992|4.6e-10|2.7e-12|1.3e-03|-9.579592e+02 -9.579604e+02| 0:0:00| chol  5↙
6
22|0.988|0.989|9.8e-09|5.7e-14|1.7e-05|-9.579604e+02 -9.579604e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.57960359e+02
 dual   objective value = -9.57960362e+02
 gap := trace(XZ)       = 1.72e-05
 relative gap           = 8.96e-09
 actual relative gap    = 1.38e-09
```

```
 rel. primal infeas     = 9.81e-09
 rel. dual   infeas     = 5.68e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.7e-08  0.0e+00  8.0e-14  0.0e+00  1.4e-09  9.0e-09
------------------------------------------------------------------

ans =

  957.9604

Epoch... 231
Epoch... 232

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|2.9e+09| 9.276438e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.939|0.936|6.1e-02|6.6e-01|3.5e+08| 8.209573e+07  5.225450e+06| 0:0:00| chol  1↙
1
 2|0.640|0.635|2.2e-02|2.4e-01|1.8e+08| 6.370217e+07  4.873695e+06| 0:0:00| chol  1↙
1
 3|0.620|0.624|8.4e-03|9.0e-02|1.0e+08| 4.923720e+07  3.715504e+06| 0:0:00| chol  1↙
2
 4|0.733|0.742|2.2e-03|2.3e-02|5.7e+07| 3.279177e+07  1.581533e+06| 0:0:00| chol  1↙
1
 5|1.000|0.882|7.4e-10|2.8e-03|2.0e+07| 1.323072e+07  4.195047e+04| 0:0:00| chol  2↙
2
 6|0.984|0.947|2.5e-10|1.5e-04|1.4e+06| 9.536132e+05 -2.193867e+03| 0:0:00| chol  2↙
2
 7|0.782|0.849|2.6e-10|2.3e-05|4.3e+05| 3.606459e+05 -4.433203e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|3.7e-11|8.4e-07|1.2e+05| 1.099035e+05 -5.698396e+03| 0:0:00| chol  1↙
2
 9|0.844|0.943|4.8e-10|4.5e-07|3.9e+04| 3.445575e+04 -3.509977e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|3.9e-10|2.1e-07|1.9e+04| 1.590343e+04 -2.387055e+03| 0:0:00| chol  2↙
2
11|1.000|0.993|5.0e-10|1.1e-07|6.3e+03| 4.821094e+03 -1.469390e+03| 0:0:00| chol  1↙
2
12|0.778|1.000|9.7e-11|5.3e-08|3.1e+03| 1.797873e+03 -1.270801e+03| 0:0:00| chol  2↙
2
13|1.000|1.000|5.3e-11|2.6e-08|1.2e+03| 1.844074e+02 -1.000127e+03| 0:0:00| chol  2↙
```

```
2
14|0.910|1.000|1.1e-10|1.3e-08|3.0e+02|-6.719917e+02 -9.677762e+02| 0:0:00| chol  2↙
1
15|1.000|0.986|3.0e-10|6.7e-09|9.2e+01|-8.526611e+02 -9.442712e+02| 0:0:00| chol  2↙
2
16|0.915|1.000|1.0e-10|3.3e-09|8.9e+00|-9.339882e+02 -9.426656e+02| 0:0:00| chol  2↙
2
17|1.000|0.802|4.3e-09|2.0e-09|3.3e+00|-9.390658e+02 -9.422363e+02| 0:0:00| chol  2↙
2
18|1.000|0.871|1.2e-09|1.0e-09|1.2e+00|-9.410481e+02 -9.422085e+02| 0:0:00| chol  2↙
2
19|0.909|1.000|2.2e-09|4.6e-10|1.4e-01|-9.421187e+02 -9.422339e+02| 0:0:00| chol  2↙
2
20|1.000|0.969|5.5e-09|2.7e-11|8.0e-03|-9.422485e+02 -9.422549e+02| 0:0:00| chol  2↙
2
21|0.987|0.989|5.2e-12|4.8e-13|1.1e-04|-9.422555e+02 -9.422556e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.42255467e+02
 dual   objective value = -9.42255552e+02
 gap := trace(XZ)       = 1.12e-04
 relative gap           = 5.94e-08
 actual relative gap    = 4.52e-08
 rel. primal infeas     = 5.20e-12
 rel. dual   infeas     = 4.76e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.1e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 9.8e-12  0.0e+00  6.7e-13  0.0e+00  4.5e-08  5.9e-08
-----------------------------------------------------------------

ans =

  942.2556

Epoch... 233
Epoch... 234

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|3.0e+09| 9.527519e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.3e-01|3.5e+08| 8.420631e+07  5.024224e+06| 0:0:00| chol  1↙
```

```
1
 2|0.644|0.639|2.1e-02|2.3e-01|1.8e+08| 6.500346e+07  4.677156e+06| 0:0:00| chol  1↙
1
 3|0.624|0.628|8.1e-03|8.5e-02|1.0e+08| 4.996157e+07  3.541756e+06| 0:0:00| chol  1↙
1
 4|0.743|0.746|2.1e-03|2.2e-02|5.7e+07| 3.289863e+07  1.465295e+06| 0:0:00| chol  1↙
2
 5|1.000|0.890|5.7e-10|2.4e-03|1.9e+07| 1.287134e+07  1.263888e+04| 0:0:00| chol  2↙
2
 6|0.984|0.950|3.2e-10|1.2e-04|1.3e+06| 9.183228e+05 -3.925277e+03| 0:0:00| chol  2↙
2
 7|0.785|0.866|2.4e-10|1.6e-05|4.3e+05| 3.642352e+05 -5.310249e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|1.1e-10|8.4e-07|1.1e+05| 1.010333e+05 -5.927868e+03| 0:0:00| chol  1↙
2
 9|0.776|0.745|3.4e-10|5.3e-07|3.5e+04| 3.043661e+04 -3.634521e+03| 0:0:00| chol  1↙
2
10|0.889|1.000|3.3e-10|2.1e-07|1.9e+04| 1.629157e+04 -2.405694e+03| 0:0:00| chol  2↙
2
11|1.000|0.914|2.2e-10|1.1e-07|7.2e+03| 5.718730e+03 -1.459993e+03| 0:0:00| chol  2↙
2
12|0.830|1.000|9.4e-11|5.3e-08|3.1e+03| 1.751938e+03 -1.329988e+03| 0:0:00| chol  2↙
2
13|1.000|0.960|7.9e-11|2.7e-08|1.1e+03| 1.162241e+02 -1.003776e+03| 0:0:00| chol  2↙
2
14|0.885|1.000|8.8e-11|1.3e-08|3.0e+02|-6.746868e+02 -9.741168e+02| 0:0:00| chol  2↙
1
15|1.000|0.986|9.9e-11|6.7e-09|9.8e+01|-8.530141e+02 -9.505549e+02| 0:0:00| chol  2↙
2
16|0.922|1.000|2.7e-10|3.3e-09|8.6e+00|-9.405487e+02 -9.489826e+02| 0:0:00| chol  2↙
2
17|0.867|0.891|3.7e-09|1.9e-09|3.6e+00|-9.451379e+02 -9.486355e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|2.5e-09|8.7e-10|1.2e+00|-9.474505e+02 -9.486320e+02| 0:0:00| chol  2↙
2
19|0.953|1.000|2.8e-10|4.8e-10|6.9e-02|-9.486084e+02 -9.486502e+02| 0:0:00| chol  3↙
3
20|0.980|0.985|1.7e-09|9.7e-12|1.5e-03|-9.486720e+02 -9.486729e+02| 0:0:00| chol  3↙
3
21|0.988|0.989|8.7e-11|1.4e-13|1.9e-05|-9.486733e+02 -9.486733e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.48673251e+02
 dual   objective value = -9.48673260e+02
 gap := trace(XZ)       = 1.91e-05
 relative gap           = 1.01e-08
 actual relative gap    = 5.06e-09
 rel. primal infeas     = 8.68e-11
 rel. dual   infeas     = 1.37e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
```

```
 termination code       =  0
 DIMACS errors: 1.5e-10  0.0e+00  1.9e-13  0.0e+00  5.1e-09  1.0e-08
------------------------------------------------------------------

ans =

  948.6733

Epoch... 235
Epoch... 236

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.6e+09| 1.160965e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.938|0.935|6.2e-02|6.7e-01|4.3e+08| 1.013026e+08  5.299918e+06| 0:0:00| chol  1↙
1
 2|0.650|0.644|2.2e-02|2.4e-01|2.2e+08| 7.834754e+07  4.932235e+06| 0:0:00| chol  1↙
1
 3|0.634|0.636|7.9e-03|8.7e-02|1.2e+08| 5.981627e+07  3.700246e+06| 0:0:00| chol  1↙
1
 4|0.760|0.754|1.9e-03|2.1e-02|6.6e+07| 3.863197e+07  1.463321e+06| 0:0:00| chol  2↙
2
 5|1.000|0.903|4.5e-10|2.1e-03|2.1e+07| 1.425043e+07 -3.233856e+04| 0:0:00| chol  2↙
2
 6|0.984|0.952|2.5e-10|1.0e-04|1.4e+06| 9.879803e+05 -6.476448e+03| 0:0:00| chol  2↙
2
 7|0.804|0.886|2.0e-10|1.2e-05|4.4e+05| 3.679113e+05 -6.123136e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|7.1e-11|8.4e-07|9.8e+04| 8.794557e+04 -5.927952e+03| 0:0:00| chol  1↙
2
 9|0.770|0.745|3.1e-10|5.3e-07|3.4e+04| 2.912609e+04 -3.528094e+03| 0:0:00| chol  1↙
2
10|1.000|1.000|2.7e-10|2.1e-07|1.6e+04| 1.372685e+04 -2.259859e+03| 0:0:00| chol  1↙
1
11|1.000|0.930|7.0e-11|1.1e-07|5.5e+03| 4.121714e+03 -1.322959e+03| 0:0:00| chol  2↙
2
12|0.833|1.000|7.6e-11|5.3e-08|2.3e+03| 1.083169e+03 -1.233473e+03| 0:0:00| chol  2↙
2
13|1.000|0.974|6.7e-11|2.7e-08|8.2e+02|-1.673125e+02 -9.823115e+02| 0:0:00| chol  1↙
1
14|0.888|1.000|8.5e-11|1.3e-08|2.0e+02|-7.639546e+02 -9.600662e+02| 0:0:00| chol  2↙
2
15|1.000|0.993|1.8e-11|6.7e-09|6.2e+01|-8.853285e+02 -9.469267e+02| 0:0:00| chol  2↙
2
16|0.921|1.000|8.8e-11|3.3e-09|5.2e+00|-9.410769e+02 -9.461132e+02| 0:0:00| chol  2↙
```

```
2
17|0.823|0.929|1.7e-09|1.8e-09|2.5e+00|-9.435972e+02 -9.459808e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|3.6e-10|8.3e-10|8.6e-01|-9.451998e+02 -9.460086e+02| 0:0:00| chol  2↙
2
19|0.975|0.987|1.0e-09|4.3e-10|2.3e-02|-9.460272e+02 -9.460258e+02| 0:0:00| chol  3↙
2
20|0.983|0.988|2.5e-10|5.7e-12|4.2e-04|-9.460491e+02 -9.460491e+02| 0:0:00| chol  4↙
7
21|0.989|0.989|8.7e-10|7.0e-14|4.9e-06|-9.460494e+02 -9.460494e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.46049410e+02
 dual   objective value = -9.46049418e+02
 gap := trace(XZ)       = 4.93e-06
 relative gap           = 2.60e-09
 actual relative gap    = 4.04e-09
 rel. primal infeas     = 8.72e-10
 rel. dual   infeas     = 7.04e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.1e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.4e-09  0.0e+00  1.0e-13  0.0e+00  4.0e-09  2.6e-09
-----------------------------------------------------------------

ans =

  946.0494

Epoch... 237
Epoch... 238

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|2.9e+09| 9.321464e+07  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.940|0.937|6.0e-02|6.3e-01|3.5e+08| 8.251587e+07  4.999806e+06| 0:0:00| chol  1↙
1
 2|0.643|0.638|2.1e-02|2.3e-01|1.8e+08| 6.369593e+07  4.655751e+06| 0:0:00| chol  1↙
1
 3|0.623|0.627|8.1e-03|8.5e-02|1.0e+08| 4.899835e+07  3.530247e+06| 0:0:00| chol  1↙
1
 4|0.741|0.745|2.1e-03|2.2e-02|5.6e+07| 3.233882e+07  1.468630e+06| 0:0:00| chol  2↙
```

```
2
 5|1.000|0.888|5.3e-10|2.4e-03|1.9e+07| 1.273489e+07  1.843215e+04| 0:0:00| chol  2↙
2
 6|0.984|0.951|4.4e-10|1.2e-04|1.3e+06| 9.078140e+05 -3.372768e+03| 0:0:00| chol  2↙
2
 7|0.784|0.864|2.3e-10|1.7e-05|4.3e+05| 3.609219e+05 -5.083740e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|9.4e-11|8.4e-07|1.1e+05| 1.004249e+05 -5.843149e+03| 0:0:00| chol  1↙
2
 9|0.781|0.737|3.4e-10|5.3e-07|3.4e+04| 2.958114e+04 -3.612380e+03| 0:0:00| chol  2↙
2
10|0.797|1.000|3.3e-10|2.1e-07|2.0e+04| 1.725859e+04 -2.433760e+03| 0:0:00| chol  1↙
2
11|1.000|0.940|1.6e-10|1.1e-07|7.5e+03| 5.963481e+03 -1.468473e+03| 0:0:00| chol  2↙
2
12|0.854|1.000|1.3e-10|5.3e-08|3.1e+03| 1.779685e+03 -1.341453e+03| 0:0:00| chol  2↙
2
13|1.000|0.964|4.5e-11|2.7e-08|1.1e+03| 1.126985e+02 -1.009640e+03| 0:0:00| chol  2↙
2
14|0.892|1.000|5.2e-11|1.3e-08|3.0e+02|-6.767368e+02 -9.790909e+02| 0:0:00| chol  2↙
2
15|1.000|0.994|3.0e-10|6.6e-09|9.9e+01|-8.569957e+02 -9.552080e+02| 0:0:00| chol  2↙
2
16|0.929|1.000|4.1e-10|3.3e-09|7.9e+00|-9.459733e+02 -9.537310e+02| 0:0:00| chol  2↙
2
17|0.841|0.989|1.7e-09|1.7e-09|3.1e+00|-9.505563e+02 -9.535183e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|4.0e-09|8.6e-10|8.9e-01|-9.526984e+02 -9.535406e+02| 0:0:00| chol  2↙
2
19|0.980|0.983|1.4e-10|4.5e-10|2.1e-02|-9.535629e+02 -9.535577e+02| 0:0:00| chol  2↙
2
20|0.987|0.989|2.0e-10|5.5e-12|2.8e-04|-9.535812e+02 -9.535812e+02| 0:0:00| chol  2↙
4
21|0.974|0.988|1.1e-09|7.9e-14|7.4e-06|-9.535814e+02 -9.535814e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.53581432e+02
 dual   objective value = -9.53581437e+02
 gap := trace(XZ)       = 7.45e-06
 relative gap           = 3.90e-09
 actual relative gap    = 2.51e-09
 rel. primal infeas     = 1.08e-09
 rel. dual   infeas     = 7.94e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.1e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.0e-09  0.0e+00  1.1e-13  0.0e+00  2.5e-09  3.9e-09
-----------------------------------------------------------------

ans =
```

```
  953.5814

Epoch... 239
Epoch... 240

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.1e+09| 9.851657e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.3e-01|3.6e+08| 8.686449e+07  5.032503e+06| 0:0:00| chol  1↙
1
 2|0.645|0.640|2.1e-02|2.3e-01|1.9e+08| 6.704126e+07  4.683783e+06| 0:0:00| chol  1↙
1
 3|0.626|0.630|8.0e-03|8.4e-02|1.1e+08| 5.143950e+07  3.538030e+06| 0:0:00| chol  1↙
2
 4|0.747|0.748|2.0e-03|2.1e-02|5.8e+07| 3.371573e+07  1.447226e+06| 0:0:00| chol  2↙
1
 5|1.000|0.893|5.0e-10|2.3e-03|1.9e+07| 1.301257e+07  1.796319e+03| 0:0:00| chol  2↙
2
 6|0.984|0.951|3.8e-10|1.1e-04|1.3e+06| 9.186206e+05 -4.195581e+03| 0:0:00| chol  2↙
2
 7|0.788|0.872|2.1e-10|1.5e-05|4.3e+05| 3.624062e+05 -5.349131e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|6.2e-11|8.4e-07|1.1e+05| 9.756001e+04 -5.879765e+03| 0:0:00| chol  1↙
2
 9|0.762|0.722|3.1e-10|5.4e-07|3.4e+04| 2.895411e+04 -3.599090e+03| 0:0:00| chol  2↙
2
10|0.729|1.000|3.5e-10|2.1e-07|2.1e+04| 1.785516e+04 -2.473503e+03| 0:0:00| chol  2↙
2
11|1.000|0.927|2.2e-10|1.1e-07|8.1e+03| 6.478340e+03 -1.540140e+03| 0:0:00| chol  2↙
2
12|0.853|1.000|1.2e-10|5.3e-08|3.4e+03| 2.020396e+03 -1.383770e+03| 0:0:00| chol  1↙
1
13|1.000|0.959|6.0e-11|2.7e-08|1.2e+03| 2.138274e+02 -1.029226e+03| 0:0:00| chol  2↙
2
14|0.890|1.000|2.1e-11|1.3e-08|3.5e+02|-6.486328e+02 -9.969526e+02| 0:0:00| chol  2↙
2
15|1.000|0.986|2.2e-10|6.7e-09|1.1e+02|-8.531796e+02 -9.675717e+02| 0:0:00| chol  2↙
2
16|0.927|1.000|8.8e-11|3.3e-09|9.8e+00|-9.560979e+02 -9.657546e+02| 0:0:00| chol  2↙
2
17|0.860|1.000|3.3e-10|1.7e-09|3.0e+00|-9.626631e+02 -9.655228e+02| 0:0:00| chol  2↙
2
18|1.000|1.000|5.4e-09|8.4e-10|6.5e-01|-9.649409e+02 -9.655474e+02| 0:0:00| chol  2↙
1
19|0.984|0.987|8.7e-11|4.4e-10|1.2e-02|-9.655799e+02 -9.655669e+02| 0:0:00| chol  2↙
```

```
2
20|0.988|0.989|1.9e-11|5.1e-12|1.5e-04|-9.655905e+02 -9.655903e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.65590460e+02
 dual   objective value = -9.65590320e+02
 gap := trace(XZ)       = 1.53e-04
 relative gap           = 7.90e-08
 actual relative gap    = -7.24e-08
 rel. primal infeas     = 1.88e-11
 rel. dual   infeas     = 5.12e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.5e-11  0.0e+00  7.2e-12  0.0e+00  -7.2e-08  7.9e-08
-----------------------------------------------------------------

ans =

  965.5906

Epoch... 241
Epoch... 242

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|9.9e+00|3.2e+09| 1.015064e+08  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.940|0.937|6.0e-02|6.3e-01|3.7e+08| 8.933910e+07  4.978200e+06| 0:0:00| chol  1↙
2
 2|0.648|0.642|2.1e-02|2.2e-01|1.9e+08| 6.880720e+07  4.628889e+06| 0:0:00| chol  1↙
1
 3|0.629|0.632|7.8e-03|8.2e-02|1.1e+08| 5.263076e+07  3.482807e+06| 0:0:00| chol  1↙
2
 4|0.752|0.751|1.9e-03|2.1e-02|5.9e+07| 3.425638e+07  1.400116e+06| 0:0:00| chol  2↙
2
 5|1.000|0.898|4.9e-10|2.1e-03|1.9e+07| 1.294972e+07 -1.242724e+04| 0:0:00| chol  1↙
1
 6|0.984|0.952|4.6e-10|1.0e-04|1.3e+06| 9.096268e+05 -5.020379e+03| 0:0:00| chol  2↙
2
 7|0.792|0.883|2.2e-10|1.2e-05|4.3e+05| 3.617156e+05 -5.752934e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|7.9e-11|8.4e-07|9.9e+04| 8.899081e+04 -5.872871e+03| 0:0:00| chol  2↙
```

```
2
 9|0.762|0.724|3.0e-10|5.4e-07|3.2e+04| 2.784475e+04 -3.524802e+03| 0:0:00| chol  2↙
2
10|0.835|1.000|3.0e-10|2.1e-07|1.8e+04| 1.561764e+04 -2.331644e+03| 0:0:00| chol  1↙
1
11|1.000|0.960|1.2e-10|1.1e-07|6.7e+03| 5.283856e+03 -1.415992e+03| 0:0:00| chol  2↙
2
12|0.845|1.000|1.0e-10|5.3e-08|2.8e+03| 1.500483e+03 -1.314768e+03| 0:0:00| chol  1↙
2
13|1.000|0.971|8.1e-11|2.7e-08|1.0e+03|-1.412028e+00 -1.013012e+03| 0:0:00| chol  2↙
2
14|0.888|1.000|3.3e-11|1.3e-08|2.6e+02|-7.234287e+02 -9.856745e+02| 0:0:00| chol  2↙
2
15|1.000|0.989|1.5e-10|6.7e-09|8.5e+01|-8.812399e+02 -9.657606e+02| 0:0:00| chol  2↙
2
16|0.940|1.000|6.2e-10|3.3e-09|5.7e+00|-9.590996e+02 -9.646595e+02| 0:0:00| chol  2↙
2
17|0.826|1.000|1.9e-10|1.7e-09|1.5e+00|-9.631716e+02 -9.646202e+02| 0:0:00| chol  2↙
2
18|1.000|0.980|2.4e-09|8.6e-10|3.0e-01|-9.643937e+02 -9.646453e+02| 0:0:00| chol  1↙
2
19|0.985|1.000|1.6e-10|4.2e-10|5.1e-03|-9.646875e+02 -9.646686e+02| 0:0:00| chol  2↙
3
20|0.986|0.987|1.4e-09|5.8e-12|7.8e-05|-9.646920e+02 -9.646917e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.64691985e+02
 dual   objective value = -9.64691735e+02
 gap := trace(XZ)       = 7.76e-05
 relative gap           = 4.02e-08
 actual relative gap    = -1.30e-07
 rel. primal infeas     = 1.38e-09
 rel. dual   infeas     = 5.77e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.5e-09  0.0e+00  8.2e-12  0.0e+00  -1.3e-07  4.0e-08
-----------------------------------------------------------------

ans =

  964.6921

Epoch... 243
Epoch... 244

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|9.9e+00|3.2e+09| 1.034196e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.2e-01|3.8e+08| 9.092987e+07  4.971860e+06| 0:0:00| chol  1↙
1
 2|0.649|0.643|2.1e-02|2.2e-01|1.9e+08| 6.994982e+07  4.621628e+06| 0:0:00| chol  1↙
1
 3|0.631|0.633|7.8e-03|8.2e-02|1.1e+08| 5.342435e+07  3.472099e+06| 0:0:00| chol  1↙
2
 4|0.755|0.753|1.9e-03|2.0e-02|6.0e+07| 3.466483e+07  1.385770e+06| 0:0:00| chol  1↙
2
 5|1.000|0.900|7.1e-10|2.0e-03|1.9e+07| 1.298443e+07 -1.840169e+04| 0:0:00| chol  2↙
2
 6|0.984|0.953|3.0e-10|9.6e-05|1.3e+06| 9.107114e+05 -5.371342e+03| 0:0:00| chol  2↙
2
 7|0.797|0.890|2.2e-10|1.1e-05|4.3e+05| 3.624831e+05 -5.975452e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|6.7e-11|8.4e-07|9.1e+04| 8.161430e+04 -5.827828e+03| 0:0:00| chol  2↙
2
 9|0.775|0.741|3.1e-10|5.3e-07|3.2e+04| 2.731353e+04 -3.453681e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|2.9e-10|2.1e-07|1.5e+04| 1.290235e+04 -2.196803e+03| 0:0:00| chol  1↙
1
11|1.000|0.943|7.0e-11|1.1e-07|5.2e+03| 3.859528e+03 -1.313126e+03| 0:0:00| chol  2↙
2
12|0.829|1.000|7.8e-11|5.3e-08|2.2e+03| 9.587567e+02 -1.240010e+03| 0:0:00| chol  2↙
2
13|1.000|0.974|7.3e-11|2.7e-08|7.7e+02|-2.329499e+02 -9.989944e+02| 0:0:00| chol  2↙
1
14|0.888|1.000|7.8e-11|1.3e-08|1.8e+02|-7.947090e+02 -9.777196e+02| 0:0:00| chol  2↙
2
15|1.000|0.995|5.8e-11|6.6e-09|5.8e+01|-9.084052e+02 -9.657592e+02| 0:0:00| chol  2↙
2
16|0.956|1.000|2.7e-10|3.3e-09|2.7e+00|-9.626894e+02 -9.652181e+02| 0:0:00| chol  2↙
2
17|0.863|1.000|2.5e-09|1.7e-09|4.1e-01|-9.649595e+02 -9.652771e+02| 0:0:00| chol  2↙
3
18|1.000|0.940|2.5e-09|9.0e-10|1.0e-01|-9.652600e+02 -9.653131e+02| 0:0:00| chol  2↙
2
19|0.984|0.993|7.7e-10|9.5e-12|1.8e-03|-9.653608e+02 -9.653620e+02| 0:0:00| chol  4↙
4
20|0.988|0.988|9.7e-10|1.5e-13|2.3e-05|-9.653623e+02 -9.653624e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.65362345e+02
 dual   objective value = -9.65362359e+02
 gap := trace(XZ)       = 2.34e-05
 relative gap           = 1.21e-08
 actual relative gap    = 6.95e-09
```

```
 rel. primal infeas     = 9.70e-10
 rel. dual   infeas     = 1.50e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.7e-09  0.0e+00  2.1e-13  0.0e+00  6.9e-09  1.2e-08
------------------------------------------------------------------

ans =

  965.3624

Epoch... 245
Epoch... 246

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.0e+09| 9.598822e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.4e-01|3.6e+08| 8.479105e+07  5.080247e+06| 0:0:00| chol  1↙
1
 2|0.644|0.638|2.2e-02|2.3e-01|1.8e+08| 6.553094e+07  4.731953e+06| 0:0:00| chol  1↙
1
 3|0.624|0.628|8.1e-03|8.6e-02|1.0e+08| 5.040841e+07  3.588051e+06| 0:0:00| chol  1↙
2
 4|0.741|0.746|2.1e-03|2.2e-02|5.7e+07| 3.324763e+07  1.492171e+06| 0:0:00| chol  2↙
2
 5|1.000|0.889|5.2e-10|2.4e-03|1.9e+07| 1.307298e+07  1.617650e+04| 0:0:00| chol  2↙
2
 6|0.984|0.950|4.1e-09|1.2e-04|1.3e+06| 9.301260e+05 -3.773616e+03| 0:0:00| chol  2↙
2
 7|0.785|0.863|9.4e-10|1.7e-05|4.3e+05| 3.604837e+05 -5.150920e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|8.6e-11|8.4e-07|1.1e+05| 1.030444e+05 -5.865609e+03| 0:0:00| chol  1↙
2
 9|0.791|0.746|3.8e-10|5.3e-07|3.5e+04| 3.028204e+04 -3.629238e+03| 0:0:00| chol  1↙
2
10|0.847|1.000|3.2e-10|2.1e-07|2.0e+04| 1.686724e+04 -2.422493e+03| 0:0:00| chol  1↙
2
11|1.000|0.942|1.1e-10|1.1e-07|7.1e+03| 5.634684e+03 -1.418030e+03| 0:0:00| chol  2↙
2
12|0.850|1.000|1.2e-10|5.3e-08|3.0e+03| 1.654370e+03 -1.303497e+03| 0:0:00| chol  2↙
2
13|1.000|0.969|5.2e-11|2.7e-08|1.1e+03| 6.035354e+01 -9.871032e+02| 0:0:00| chol  1↙
```

```
1
14|0.893|1.000|2.1e-11|1.3e-08|2.8e+02|-6.833812e+02 -9.581398e+02| 0:0:00| chol  2↙
2
15|1.000|0.997|6.7e-11|6.6e-09|8.9e+01|-8.488914e+02 -9.374262e+02| 0:0:00| chol  2↙
1
16|0.943|1.000|2.3e-11|3.3e-09|5.7e+00|-9.308287e+02 -9.363003e+02| 0:0:00| chol  2↙
2
17|0.851|1.000|3.9e-12|1.7e-09|1.1e+00|-9.353290e+02 -9.362917e+02| 0:0:00| chol  3↙
2
18|1.000|0.975|2.7e-09|8.4e-10|1.6e-01|-9.362068e+02 -9.363206e+02| 0:0:00| chol  1↙
2
19|0.982|0.999|1.7e-10|2.0e-12|3.0e-03|-9.363651e+02 -9.363680e+02| 0:0:00| chol  6↙
7
20|0.970|0.985|1.3e-08|1.9e-13|1.0e-04|-9.363679e+02 -9.363680e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.36367885e+02
 dual   objective value = -9.36368006e+02
 gap := trace(XZ)       = 1.00e-04
 relative gap           = 5.34e-08
 actual relative gap    = 6.47e-08
 rel. primal infeas     = 1.26e-08
 rel. dual   infeas     = 1.89e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-08  0.0e+00  2.7e-13  0.0e+00  6.5e-08  5.3e-08
-----------------------------------------------------------------

ans =

  936.3680

Epoch... 247
Epoch... 248

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|3.1e+09| 9.879082e+07  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.4e-01|3.6e+08| 8.710599e+07  5.061457e+06| 0:0:00| chol  1↙
1
 2|0.645|0.640|2.1e-02|2.3e-01|1.9e+08| 6.722909e+07  4.711550e+06| 0:0:00| chol  1↙
```

```
2
 3|0.626|0.630|8.0e-03|8.5e-02|1.1e+08| 5.159870e+07  3.562469e+06| 0:0:00| chol  1↙
2
 4|0.746|0.748|2.0e-03|2.1e-02|5.8e+07| 3.386000e+07  1.463220e+06| 0:0:00| chol  2↙
2
 5|1.000|0.892|6.5e-10|2.3e-03|2.0e+07| 1.312259e+07  4.314993e+03| 0:0:00| chol  2↙
2
 6|0.984|0.951|3.8e-10|1.1e-04|1.3e+06| 9.290132e+05 -4.304970e+03| 0:0:00| chol  2↙
2
 7|0.788|0.870|2.5e-10|1.5e-05|4.3e+05| 3.624472e+05 -5.375239e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|6.2e-11|8.4e-07|1.1e+05| 9.981957e+04 -5.897592e+03| 0:0:00| chol  1↙
1
 9|0.769|0.730|3.2e-10|5.4e-07|3.4e+04| 2.970193e+04 -3.609466e+03| 0:0:00| chol  1↙
2
10|0.782|1.000|3.4e-10|2.1e-07|2.0e+04| 1.751779e+04 -2.446621e+03| 0:0:00| chol  2↙
2
11|1.000|0.925|2.2e-10|1.1e-07|7.8e+03| 6.270826e+03 -1.497363e+03| 0:0:00| chol  2↙
2
12|0.846|1.000|1.1e-10|5.3e-08|3.3e+03| 1.953337e+03 -1.350942e+03| 0:0:00| chol  2↙
2
13|1.000|0.960|8.2e-11|2.7e-08|1.2e+03| 1.976912e+02 -1.004918e+03| 0:0:00| chol  1↙
2
14|0.889|1.000|3.0e-11|1.3e-08|3.3e+02|-6.428978e+02 -9.734485e+02| 0:0:00| chol  2↙
2
15|1.000|0.987|5.5e-11|6.7e-09|1.1e+02|-8.382740e+02 -9.464833e+02| 0:0:00| chol  2↙
2
16|0.934|1.000|1.3e-11|3.3e-09|8.3e+00|-9.367426e+02 -9.448981e+02| 0:0:00| chol  2↙
2
17|0.849|1.000|1.4e-09|1.6e-09|1.9e+00|-9.429474e+02 -9.447948e+02| 0:0:00| chol  2↙
2
18|1.000|0.989|6.0e-09|8.4e-10|2.5e-01|-9.446120e+02 -9.448178e+02| 0:0:00| chol  1↙
2
19|0.984|0.999|2.3e-10|4.2e-10|4.3e-03|-9.448603e+02 -9.448408e+02| 0:0:00| chol  3↙
3
20|0.982|0.986|4.2e-10|5.9e-12|8.3e-05|-9.448642e+02 -9.448640e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.44864214e+02
 dual   objective value = -9.44863954e+02
 gap := trace(XZ)       = 8.30e-05
 relative gap           = 4.39e-08
 actual relative gap    = -1.37e-07
 rel. primal infeas     = 4.19e-10
 rel. dual   infeas     = 5.88e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.7e-10  0.0e+00  8.3e-12  0.0e+00  -1.4e-07  4.4e-08
-----------------------------------------------------------------
```

```
ans =

  944.8643

Epoch... 249
Epoch... 250

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.5e+09| 1.142418e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.940|0.937|6.0e-02|6.3e-01|4.2e+08| 9.985045e+07  5.062745e+06| 0:0:00| chol  2↙
1
 2|0.653|0.647|2.1e-02|2.2e-01|2.1e+08| 7.666700e+07  4.700125e+06| 0:0:00| chol  1↙
1
 3|0.636|0.638|7.6e-03|8.1e-02|1.2e+08| 5.824291e+07  3.507456e+06| 0:0:00| chol  1↙
2
 4|0.766|0.758|1.8e-03|2.0e-02|6.4e+07| 3.729796e+07  1.356827e+06| 0:0:00| chol  2↙
2
 5|1.000|0.907|1.4e-09|1.8e-03|2.0e+07| 1.339385e+07 -4.143029e+04| 0:0:00| chol  2↙
2
 6|0.983|0.954|3.4e-10|8.5e-05|1.3e+06| 9.319834e+05 -6.860782e+03| 0:0:00| chol  2↙
2
 7|0.807|0.905|2.3e-10|8.5e-06|4.2e+05| 3.592947e+05 -6.461861e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|7.2e-11|8.4e-07|7.7e+04| 6.824383e+04 -5.685359e+03| 0:0:00| chol  1↙
1
 9|0.806|0.810|3.5e-10|5.0e-07|3.1e+04| 2.712368e+04 -3.224486e+03| 0:0:00| chol  2↙
1
10|1.000|1.000|2.2e-10|2.1e-07|1.5e+04| 1.229887e+04 -2.057665e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|3.1e-10|1.1e-07|4.5e+03| 3.132031e+03 -1.331733e+03| 0:0:00| chol  1↙
2
12|1.000|1.000|9.8e-11|5.3e-08|1.5e+03| 4.639689e+02 -1.060820e+03| 0:0:00| chol  2↙
2
13|1.000|1.000|9.0e-11|2.6e-08|4.5e+02|-5.337817e+02 -9.768903e+02| 0:0:00| chol  2↙
1
14|1.000|1.000|1.0e-10|1.3e-08|1.4e+02|-8.076546e+02 -9.473501e+02| 0:0:00| chol  2↙
2
15|0.914|1.000|2.4e-10|6.6e-09|1.7e+01|-9.279498e+02 -9.444449e+02| 0:0:00| chol  2↙
2
16|0.942|0.971|4.2e-10|3.4e-09|3.3e+00|-9.410530e+02 -9.441830e+02| 0:0:00| chol  3↙
2
17|1.000|1.000|2.7e-10|1.7e-09|3.2e-01|-9.440344e+02 -9.442582e+02| 0:0:00| chol  2↙
2
18|0.986|0.991|1.3e-10|8.4e-10|5.0e-03|-9.443462e+02 -9.443033e+02| 0:0:00| chol  2↙
```

```
2
19|0.988|0.989|1.5e-10|9.7e-12|6.4e-05|-9.443506e+02 -9.443502e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 19
 primal objective value = -9.44350629e+02
 dual   objective value = -9.44350153e+02
 gap := trace(XZ)       = 6.43e-05
 relative gap           = 3.40e-08
 actual relative gap    = -2.52e-07
 rel. primal infeas     = 1.47e-10
 rel. dual   infeas     = 9.66e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.10
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-10  0.0e+00  1.4e-11  0.0e+00  -2.5e-07  3.4e-08
-------------------------------------------------------------------

ans =

  944.3507

Epoch... 251
Epoch... 252

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|3.4e+09| 1.088683e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.940|0.937|6.0e-02|6.4e-01|4.0e+08| 9.541227e+07  5.101733e+06| 0:0:00| chol  1↙
1
 2|0.650|0.644|2.1e-02|2.3e-01|2.0e+08| 7.337765e+07  4.739994e+06| 0:0:00| chol  1↙
1
 3|0.632|0.635|7.7e-03|8.3e-02|1.1e+08| 5.596028e+07  3.553596e+06| 0:0:00| chol  1↙
2
 4|0.758|0.754|1.9e-03|2.0e-02|6.2e+07| 3.617197e+07  1.405094e+06| 0:0:00| chol  1↙
1
 5|1.000|0.902|5.1e-10|2.0e-03|2.0e+07| 1.338685e+07 -2.642565e+04| 0:0:00| chol  2↙
2
 6|0.983|0.952|4.6e-10|9.6e-05|1.3e+06| 9.403552e+05 -6.213021e+03| 0:0:00| chol  2↙
2
 7|0.800|0.891|4.7e-10|1.1e-05|4.4e+05| 3.709182e+05 -6.299750e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|8.0e-11|8.4e-07|8.9e+04| 7.912404e+04 -5.910585e+03| 0:0:00| chol  1↙
```

```
2
 9|0.790|0.803|3.2e-10|5.1e-07|3.4e+04| 2.917944e+04 -3.436602e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|2.1e-10|2.1e-07|1.6e+04| 1.350741e+04 -2.162436e+03| 0:0:00| chol  1↙
2
11|1.000|1.000|2.4e-10|1.1e-07|4.6e+03| 3.220249e+03 -1.380000e+03| 0:0:00| chol  2↙
2
12|1.000|1.000|7.9e-11|5.3e-08|1.7e+03| 5.837904e+02 -1.075375e+03| 0:0:00| chol  2↙
2
13|0.866|1.000|5.8e-11|2.6e-08|5.4e+02|-4.850738e+02 -1.026469e+03| 0:0:00| chol  2↙
2
14|1.000|1.000|6.3e-11|1.3e-08|1.9e+02|-7.905226e+02 -9.789968e+02| 0:0:00| chol  2↙
1
15|0.914|1.000|3.2e-11|6.6e-09|2.1e+01|-9.546055e+02 -9.752836e+02| 0:0:00| chol  2↙
2
16|0.926|0.956|7.2e-11|3.4e-09|5.4e+00|-9.694473e+02 -9.746965e+02| 0:0:00| chol  2↙
2
17|1.000|1.000|5.2e-10|1.7e-09|1.3e+00|-9.735132e+02 -9.747403e+02| 0:0:00| chol  2↙
2
18|0.979|0.981|1.6e-10|8.5e-10|3.0e-02|-9.747973e+02 -9.747790e+02| 0:0:00| chol  2↙
2
19|0.988|0.989|5.8e-10|1.0e-11|4.1e-04|-9.748263e+02 -9.748262e+02| 0:0:00| chol  3↙
4
20|0.989|0.989|2.4e-09|1.2e-13|5.1e-06|-9.748267e+02 -9.748267e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -9.74826696e+02
 dual   objective value = -9.74826697e+02
 gap := trace(XZ)       = 5.10e-06
 relative gap           = 2.62e-09
 actual relative gap    = 2.11e-10
 rel. primal infeas     = 2.38e-09
 rel. dual   infeas     = 1.21e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.2e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.0e-09  0.0e+00  1.7e-13  0.0e+00  2.1e-10  2.6e-09
-----------------------------------------------------------------

ans =

  974.8267

Epoch... 253
Epoch... 254

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|4.4e+09| 1.436658e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.941|0.938|5.9e-02|6.3e-01|5.1e+08| 1.241051e+08  5.043690e+06| 0:0:00| chol  2↙
1
 2|0.666|0.659|2.0e-02|2.1e-01|2.6e+08| 9.433722e+07  4.656856e+06| 0:0:00| chol  1↙
1
 3|0.656|0.653|6.8e-03|7.4e-02|1.4e+08| 7.026032e+07  3.385152e+06| 0:0:00| chol  1↙
2
 4|0.806|0.776|1.3e-03|1.7e-02|7.2e+07| 4.274664e+07  1.148570e+06| 0:0:00| chol  2↙
1
 5|1.000|0.929|3.9e-10|1.2e-03|1.8e+07| 1.230618e+07 -7.968532e+04| 0:0:00| chol  2↙
2
 6|0.981|0.957|3.0e-10|5.1e-05|1.3e+06| 8.780387e+05 -9.175297e+03| 0:0:00| chol  2↙
2
 7|0.843|0.993|2.7e-10|1.8e-06|4.0e+05| 3.473484e+05 -7.812249e+03| 0:0:00| chol  2↙
2
 8|1.000|1.000|8.5e-11|8.4e-07|3.6e+04| 2.852846e+04 -5.391770e+03| 0:0:00| chol  2↙
2
 9|0.647|0.917|2.9e-10|4.6e-07|2.2e+04| 1.856324e+04 -2.656042e+03| 0:0:00| chol  1↙
2
10|0.838|0.869|4.8e-10|2.4e-07|1.2e+04| 9.182881e+03 -2.153499e+03| 0:0:00| chol  2↙
2
11|0.445|0.463|2.5e-10|1.8e-07|9.0e+03| 7.533987e+03 -1.391100e+03| 0:0:00| chol  2↙
2
12|0.730|1.000|6.6e-11|5.3e-08|5.4e+03| 3.841286e+03 -1.499826e+03| 0:0:00| chol  2↙
1
13|1.000|1.000|3.4e-11|2.6e-08|1.8e+03| 6.864728e+02 -1.138507e+03| 0:0:00| chol  2↙
2
14|1.000|1.000|1.6e-10|1.3e-08|5.7e+02|-4.343854e+02 -1.002342e+03| 0:0:00| chol  2↙
2
15|0.957|1.000|1.2e-11|6.6e-09|1.2e+02|-8.587092e+02 -9.795944e+02| 0:0:00| chol  2↙
2
16|1.000|1.000|2.8e-10|3.3e-09|3.4e+01|-9.403979e+02 -9.742098e+02| 0:0:00| chol  2↙
2
17|0.930|0.935|3.8e-11|1.8e-09|2.6e+00|-9.708720e+02 -9.733550e+02| 0:0:00| chol  3↙
3
18|0.864|0.947|2.7e-09|8.8e-10|9.9e-01|-9.723838e+02 -9.733279e+02| 0:0:00| chol  3↙
3
19|1.000|1.000|3.9e-09|4.2e-10|2.5e-01|-9.731280e+02 -9.733498e+02| 0:0:00| chol  3↙
3
20|0.986|0.986|2.2e-10|5.3e-11|3.9e-03|-9.733673e+02 -9.733682e+02| 0:0:00| chol  2↙
2
21|0.989|0.989|3.3e-11|6.6e-13|4.9e-05|-9.733708e+02 -9.733708e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.73370779e+02
 dual   objective value = -9.73370790e+02
 gap := trace(XZ)       = 4.87e-05
```

```
 relative gap           = 2.50e-08
 actual relative gap    = 5.52e-09
 rel. primal infeas     = 3.30e-11
 rel. dual   infeas     = 6.58e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.7e-11  0.0e+00  9.3e-13  0.0e+00  5.5e-09  2.5e-08
------------------------------------------------------------------

ans =

  973.3708

Epoch... 255
Epoch... 256

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|1.0e+01|4.5e+09| 1.493851e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.941|0.938|5.9e-02|6.3e-01|5.3e+08| 1.288385e+08  5.040275e+06| 0:0:00| chol  1↙
1
 2|0.669|0.661|1.9e-02|2.1e-01|2.7e+08| 9.770860e+07  4.649910e+06| 0:0:00| chol  1↙
1
 3|0.659|0.656|6.6e-03|7.3e-02|1.5e+08| 7.249647e+07  3.365936e+06| 0:0:00| chol  1↙
1
 4|0.814|0.779|1.2e-03|1.6e-02|7.4e+07| 4.368934e+07  1.115574e+06| 0:0:00| chol  1↙
2
 5|1.000|0.932|4.1e-10|1.1e-03|1.8e+07| 1.192251e+07 -7.969748e+04| 0:0:00| chol  1↙
2
 6|0.980|0.957|5.2e-10|4.7e-05|1.2e+06| 8.617031e+05 -9.079097e+03| 0:0:00| chol  2↙
2
 7|0.846|1.000|3.2e-10|1.7e-06|4.0e+05| 3.464583e+05 -7.867327e+03| 0:0:00| chol  2↙
2
 8|0.999|0.960|8.3e-11|8.8e-07|2.6e+04| 1.901355e+04 -5.277687e+03| 0:0:00| chol  2↙
2
 9|0.361|1.000|1.2e-10|4.2e-07|2.0e+04| 1.523112e+04 -4.231727e+03| 0:0:00| chol  2↙
2
10|1.000|0.768|2.3e-10|2.6e-07|8.8e+03| 6.824304e+03 -1.808577e+03| 0:0:00| chol  2↙
2
11|1.000|0.955|2.1e-10|1.1e-07|3.2e+03| 2.002258e+03 -1.171490e+03| 0:0:00| chol  2↙
2
12|0.865|1.000|8.6e-11|5.3e-08|1.3e+03| 1.439798e+02 -1.103528e+03| 0:0:00| chol  2↙
```

```
1
13|1.000|0.988|1.2e-10|2.7e-08|4.5e+02|-5.281164e+02 -9.723306e+02| 0:0:00| chol  2↙
2
14|0.889|1.000|4.7e-11|1.3e-08|8.2e+01|-8.802882e+02 -9.618718e+02| 0:0:00| chol  2↙
2
15|1.000|0.958|2.1e-10|6.9e-09|2.4e+01|-9.344601e+02 -9.578033e+02| 0:0:00| chol  2↙
2
16|0.847|1.000|1.2e-10|3.3e-09|4.1e+00|-9.536996e+02 -9.575752e+02| 0:0:00| chol  2↙
3
17|1.000|0.696|7.8e-09|2.2e-09|1.8e+00|-9.558979e+02 -9.575266e+02| 0:0:00| chol  3↙
2
18|0.865|1.000|6.1e-10|8.6e-10|2.9e-01|-9.573501e+02 -9.575928e+02| 0:0:00| chol  3↙
3
19|1.000|0.899|3.5e-09|5.0e-10|9.1e-02|-9.575453e+02 -9.576076e+02| 0:0:00| chol  2↙
2
20|0.981|0.992|1.7e-11|6.8e-12|1.8e-03|-9.576315e+02 -9.576329e+02| 0:0:00| chol  6↙
4
21|0.986|0.989|4.9e-12|1.2e-13|2.7e-05|-9.576331e+02 -9.576331e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.57633093e+02
 dual   objective value = -9.57633114e+02
 gap := trace(XZ)       = 2.74e-05
 relative gap           = 1.43e-08
 actual relative gap    = 1.13e-08
 rel. primal infeas     = 4.91e-12
 rel. dual   infeas     = 1.21e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.9e-12  0.0e+00  1.7e-13  0.0e+00  1.1e-08  1.4e-08
-----------------------------------------------------------------

ans =

  957.6331

Epoch... 257
Epoch... 258

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*****************************************************************
   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|1.0e+01|4.6e+09| 1.502640e+08  0.000000e+00| 0:0:00| chol  2↙
```

```
2
 1|0.941|0.939|5.9e-02|6.2e-01|5.3e+08| 1.295732e+08  5.007552e+06| 0:0:00| chol  1↙
1
 2|0.670|0.662|1.9e-02|2.1e-01|2.7e+08| 9.812326e+07  4.617219e+06| 0:0:00| chol  1↙
1
 3|0.660|0.656|6.6e-03|7.2e-02|1.5e+08| 7.269164e+07  3.335977e+06| 0:0:00| chol  1↙
1
 4|0.816|0.780|1.2e-03|1.6e-02|7.4e+07| 4.364275e+07  1.094741e+06| 0:0:00| chol  2↙
2
 5|1.000|0.933|4.6e-10|1.1e-03|1.7e+07| 1.163945e+07 -7.835866e+04| 0:0:00| chol  2↙
2
 6|0.980|0.958|3.0e-10|4.6e-05|1.2e+06| 8.476102e+05 -8.971899e+03| 0:0:00| chol  2↙
2
 7|0.846|1.000|4.0e-10|1.7e-06|4.0e+05| 3.456208e+05 -7.884897e+03| 0:0:00| chol  1↙
2
 8|0.982|0.921|8.0e-11|9.1e-07|2.7e+04| 2.014732e+04 -5.288987e+03| 0:0:00| chol  1↙
2
 9|0.340|1.000|8.9e-11|4.2e-07|2.1e+04| 1.645307e+04 -4.403802e+03| 0:0:00| chol  1↙
1
10|1.000|0.780|8.5e-11|2.6e-07|9.2e+03| 7.300062e+03 -1.808255e+03| 0:0:00| chol  2↙
1
11|1.000|0.982|1.2e-10|1.1e-07|3.5e+03| 2.261603e+03 -1.168072e+03| 0:0:00| chol  2↙
2
12|0.876|1.000|4.6e-11|5.3e-08|1.3e+03| 1.936231e+02 -1.110638e+03| 0:0:00| chol  2↙
2
13|1.000|0.987|3.8e-11|2.7e-08|4.5e+02|-5.200737e+02 -9.717338e+02| 0:0:00| chol  2↙
2
14|0.889|1.000|1.1e-10|1.3e-08|8.5e+01|-8.766657e+02 -9.606028e+02| 0:0:00| chol  2↙
2
15|1.000|0.961|3.8e-10|6.9e-09|2.4e+01|-9.322978e+02 -9.563390e+02| 0:0:00| chol  2↙
2
16|0.820|1.000|4.8e-11|3.3e-09|5.1e+00|-9.511364e+02 -9.560193e+02| 0:0:00| chol  2↙
3
17|1.000|0.691|5.0e-10|2.2e-09|2.2e+00|-9.538208e+02 -9.559123e+02| 0:0:00| chol  2↙
2
18|0.849|1.000|3.5e-10|8.4e-10|4.5e-01|-9.555724e+02 -9.559759e+02| 0:0:00| chol  3↙
3
19|1.000|0.777|1.1e-09|5.3e-10|1.7e-01|-9.558379e+02 -9.559780e+02| 0:0:00| chol  2↙
2
20|0.980|0.983|3.6e-10|1.5e-11|3.8e-03|-9.560024e+02 -9.560053e+02| 0:0:00| chol  2↙
3
21|0.988|0.989|1.9e-10|2.5e-13|5.0e-05|-9.560057e+02 -9.560058e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.56005726e+02
 dual   objective value = -9.56005761e+02
 gap := trace(XZ)       = 5.00e-05
 relative gap           = 2.61e-08
 actual relative gap    = 1.86e-08
 rel. primal infeas     = 1.92e-10
 rel. dual   infeas     = 2.50e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 5.0e+05, 1.4e+06, 3.6e+04
```

```
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.7e-10  0.0e+00  3.5e-13  0.0e+00  1.9e-08  2.6e-08
------------------------------------------------------------------

ans =

  956.0058

Epoch... 259
Epoch... 260

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.9e+00|4.4e+09| 1.425658e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.942|0.939|5.8e-02|6.1e-01|5.1e+08| 1.232387e+08  4.901227e+06| 0:0:00| chol  1↙
1
 2|0.668|0.660|1.9e-02|2.1e-01|2.5e+08| 9.338627e+07  4.521757e+06| 0:0:00| chol  1↙
1
 3|0.658|0.654|6.7e-03|7.1e-02|1.4e+08| 6.936016e+07  3.278315e+06| 0:0:00| chol  1↙
1
 4|0.810|0.778|1.3e-03|1.6e-02|7.1e+07| 4.195714e+07  1.097060e+06| 0:0:00| chol  2↙
2
 5|1.000|0.931|4.5e-09|1.1e-03|1.7e+07| 1.171722e+07 -7.693594e+04| 0:0:00| chol  2↙
2
 6|0.980|0.957|2.6e-10|4.8e-05|1.2e+06| 8.444185e+05 -8.423103e+03| 0:0:00| chol  2↙
2
 7|0.843|1.000|3.1e-10|1.7e-06|4.0e+05| 3.471298e+05 -7.682241e+03| 0:0:00| chol  1↙
1
 8|0.985|0.934|8.9e-11|9.0e-07|2.6e+04| 1.976133e+04 -5.217055e+03| 0:0:00| chol  2↙
2
 9|0.333|1.000|9.4e-11|4.2e-07|2.1e+04| 1.621157e+04 -4.333647e+03| 0:0:00| chol  1↙
1
10|1.000|0.777|9.6e-11|2.6e-07|9.2e+03| 7.247814e+03 -1.811207e+03| 0:0:00| chol  1↙
2
11|1.000|0.982|1.2e-10|1.1e-07|3.5e+03| 2.266957e+03 -1.180038e+03| 0:0:00| chol  1↙
2
12|0.874|1.000|5.4e-11|5.3e-08|1.3e+03| 1.886605e+02 -1.124244e+03| 0:0:00| chol  2↙
2
13|1.000|0.986|5.3e-11|2.7e-08|4.6e+02|-5.296723e+02 -9.845895e+02| 0:0:00| chol  2↙
2
14|0.889|1.000|1.4e-10|1.3e-08|8.6e+01|-8.880183e+02 -9.732868e+02| 0:0:00| chol  2↙
2
15|1.000|0.954|1.6e-10|6.9e-09|2.5e+01|-9.440698e+02 -9.687015e+02| 0:0:00| chol  2↙
```

```
2
16|0.796|1.000|1.2e-10|3.3e-09|6.2e+00|-9.622492e+02 -9.682532e+02| 0:0:00| chol  2↙
3
17|1.000|0.763|7.3e-09|2.1e-09|2.6e+00|-9.655675e+02 -9.680671e+02| 0:0:00| chol  2↙
2
18|0.838|1.000|1.3e-09|8.6e-10|6.6e-01|-9.675042e+02 -9.681187e+02| 0:0:00| chol  3↙
3
19|1.000|0.861|1.5e-09|5.3e-10|2.4e-01|-9.679001e+02 -9.681051e+02| 0:0:00| chol  3↙
3
20|0.955|0.951|1.6e-09|8.6e-11|1.3e-02|-9.681175e+02 -9.681259e+02| 0:0:00| chol  4↙
3
21|0.971|0.983|2.2e-10|2.1e-12|4.1e-04|-9.681291e+02 -9.681294e+02| 0:0:00| chol 11↙
26
22|0.985|0.989|2.6e-09|3.4e-14|6.6e-06|-9.681294e+02 -9.681294e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.68129430e+02
 dual   objective value = -9.68129445e+02
 gap := trace(XZ)       = 6.58e-06
 relative gap           = 3.39e-09
 actual relative gap    = 7.69e-09
 rel. primal infeas     = 2.65e-09
 rel. dual   infeas     = 3.41e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.8e-09  0.0e+00  4.8e-14  0.0e+00  7.7e-09  3.4e-09
------------------------------------------------------------------

ans =

  968.1294

Epoch... 261
Epoch... 262

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.9e+00|4.1e+09| 1.320565e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.941|0.939|5.9e-02|6.1e-01|4.7e+08| 1.145884e+08  4.887171e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.0e-02|2.1e-01|2.4e+08| 8.704439e+07  4.515886e+06| 0:0:00| chol  1↙
```

```
1
 3|0.651|0.649|6.9e-03|7.3e-02|1.3e+08| 6.506617e+07  3.302595e+06| 0:0:00| chol  1↙
1
 4|0.796|0.772|1.4e-03|1.7e-02|6.8e+07| 4.007242e+07  1.157586e+06| 0:0:00| chol  1↙
2
 5|1.000|0.925|2.9e-09|1.3e-03|1.8e+07| 1.230852e+07 -7.338641e+04| 0:0:00| chol  2↙
2
 6|0.981|0.957|2.3e-10|5.5e-05|1.2e+06| 8.701350e+05 -8.125731e+03| 0:0:00| chol  2↙
2
 7|0.837|0.984|3.7e-10|2.0e-06|4.1e+05| 3.512481e+05 -7.432412e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|7.6e-11|8.4e-07|3.2e+04| 2.553116e+04 -5.228606e+03| 0:0:00| chol  1↙
2
 9|0.575|1.000|2.5e-10|4.2e-07|2.1e+04| 1.788709e+04 -2.539194e+03| 0:0:00| chol  1↙
2
10|0.945|1.000|4.5e-10|2.1e-07|9.2e+03| 7.293572e+03 -1.803027e+03| 0:0:00| chol  2↙
2
11|1.000|0.698|4.9e-10|1.4e-07|4.3e+03| 2.992947e+03 -1.246753e+03| 0:0:00| chol  2↙
2
12|0.783|1.000|9.9e-11|5.3e-08|1.5e+03| 3.218495e+02 -1.198710e+03| 0:0:00| chol  2↙
2
13|1.000|0.770|1.5e-10|3.2e-08|6.4e+02|-3.525744e+02 -9.930817e+02| 0:0:00| chol  2↙
1
14|0.858|1.000|6.3e-11|1.3e-08|1.1e+02|-8.638472e+02 -9.753846e+02| 0:0:00| chol  2↙
2
15|1.000|0.791|5.1e-11|8.0e-09|4.2e+01|-9.237878e+02 -9.648277e+02| 0:0:00| chol  2↙
2
16|0.823|1.000|4.9e-11|3.3e-09|8.2e+00|-9.557195e+02 -9.636848e+02| 0:0:00| chol  2↙
2
17|1.000|0.663|8.8e-11|2.2e-09|3.8e+00|-9.595511e+02 -9.632290e+02| 0:0:00| chol  2↙
2
18|0.798|1.000|9.4e-10|8.4e-10|1.2e+00|-9.621402e+02 -9.632700e+02| 0:0:00| chol  2↙
3
19|1.000|0.713|1.8e-09|5.6e-10|4.6e-01|-9.627699e+02 -9.632023e+02| 0:0:00| chol  2↙
2
20|0.945|0.984|8.7e-11|8.2e-11|3.8e-02|-9.631806e+02 -9.632135e+02| 0:0:00| chol  2↙
2
21|0.987|0.987|2.1e-11|1.9e-12|5.4e-04|-9.632148e+02 -9.632152e+02| 0:0:00| chol  6↙
7
22|0.983|0.988|2.8e-09|3.8e-14|9.6e-06|-9.632152e+02 -9.632152e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.63215210e+02
 dual   objective value = -9.63215212e+02
 gap := trace(XZ)       = 9.56e-06
 relative gap           = 4.96e-09
 actual relative gap    = 1.08e-09
 rel. primal infeas     = 2.78e-09
 rel. dual   infeas     = 3.83e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
```

```
 termination code       =  0
 DIMACS errors: 4.3e-09  0.0e+00  5.4e-14  0.0e+00  1.1e-09  5.0e-09
------------------------------------------------------------------

ans =

  963.2152

Epoch... 263
Epoch... 264

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.9e+00|4.1e+09| 1.344544e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.942|0.939|5.8e-02|6.0e-01|4.8e+08| 1.165715e+08  4.858684e+06| 0:0:00| chol  1↙
1
 2|0.665|0.658|2.0e-02|2.1e-01|2.4e+08| 8.841814e+07  4.486523e+06| 0:0:00| chol  1↙
1
 3|0.653|0.651|6.8e-03|7.2e-02|1.3e+08| 6.593963e+07  3.271428e+06| 0:0:00| chol  1↙
1
 4|0.801|0.774|1.3e-03|1.6e-02|6.8e+07| 4.037068e+07  1.129353e+06| 0:0:00| chol  1↙
1
 5|1.000|0.927|1.9e-09|1.2e-03|1.8e+07| 1.204512e+07 -7.464684e+04| 0:0:00| chol  2↙
2
 6|0.981|0.957|2.3e-10|5.2e-05|1.2e+06| 8.563393e+05 -8.140660e+03| 0:0:00| chol  2↙
2
 7|0.839|0.997|2.9e-10|1.7e-06|4.0e+05| 3.483882e+05 -7.483784e+03| 0:0:00| chol  2↙
2
 8|1.000|1.000|7.9e-11|8.4e-07|3.0e+04| 2.342447e+04 -5.181369e+03| 0:0:00| chol  2↙
2
 9|0.599|0.981|2.7e-10|4.3e-07|1.9e+04| 1.633803e+04 -2.403115e+03| 0:0:00| chol  1↙
2
10|0.795|1.000|3.3e-10|2.1e-07|1.0e+04| 7.942956e+03 -1.959919e+03| 0:0:00| chol  2↙
2
11|1.000|0.900|3.3e-10|1.2e-07|3.9e+03| 2.662020e+03 -1.212960e+03| 0:0:00| chol  1↙
2
12|0.805|1.000|6.6e-11|5.3e-08|1.4e+03| 2.456473e+02 -1.126708e+03| 0:0:00| chol  2↙
1
13|1.000|0.926|8.3e-11|2.8e-08|5.1e+02|-4.787860e+02 -9.813140e+02| 0:0:00| chol  2↙
2
14|0.870|1.000|1.8e-10|1.3e-08|9.7e+01|-8.736138e+02 -9.694161e+02| 0:0:00| chol  2↙
2
15|1.000|0.893|1.9e-10|7.3e-09|3.1e+01|-9.326432e+02 -9.631122e+02| 0:0:00| chol  2↙
2
16|0.789|1.000|9.6e-11|3.3e-09|7.7e+00|-9.548615e+02 -9.623382e+02| 0:0:00| chol  2↙
```

```
2
17|1.000|0.778|3.2e-09|2.0e-09|3.3e+00|-9.587806e+02 -9.619856e+02| 0:0:00| chol  2↙
2
18|0.816|1.000|4.8e-10|8.5e-10|1.0e+00|-9.610627e+02 -9.620274e+02| 0:0:00| chol  2↙
3
19|1.000|0.704|2.7e-09|5.9e-10|3.5e-01|-9.616763e+02 -9.619951e+02| 0:0:00| chol  2↙
2
20|0.956|0.967|6.3e-10|9.3e-11|2.1e-02|-9.619906e+02 -9.620064e+02| 0:0:00| chol  2↙
3
21|0.987|0.985|1.7e-10|1.9e-12|3.2e-04|-9.620086e+02 -9.620088e+02| 0:0:00| chol  7↙
6
22|0.989|0.988|8.5e-11|2.9e-14|4.1e-06|-9.620088e+02 -9.620088e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.62008811e+02
 dual   objective value = -9.62008814e+02
 gap := trace(XZ)       = 4.05e-06
 relative gap           = 2.11e-09
 actual relative gap    = 1.81e-09
 rel. primal infeas     = 8.48e-11
 rel. dual   infeas     = 2.89e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.3e-10  0.0e+00  4.1e-14  0.0e+00  1.8e-09  2.1e-09
-------------------------------------------------------------------

ans =

  962.0088

Epoch... 265
Epoch... 266

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.8e+00|4.1e+09| 1.343109e+08  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.942|0.939|5.8e-02|6.0e-01|4.8e+08| 1.164596e+08  4.834983e+06| 0:0:00| chol  2↙
1
 2|0.665|0.658|1.9e-02|2.1e-01|2.4e+08| 8.827577e+07  4.463643e+06| 0:0:00| chol  1↙
1
 3|0.653|0.651|6.8e-03|7.1e-02|1.3e+08| 6.579720e+07  3.252654e+06| 0:0:00| chol  1↙
```

```
1
 4|0.802|0.774|1.3e-03|1.6e-02|6.8e+07| 4.023571e+07  1.119367e+06| 0:0:00| chol  1↙
1
 5|1.000|0.927|1.6e-09|1.2e-03|1.8e+07| 1.193428e+07 -7.441995e+04| 0:0:00| chol  2↙
2
 6|0.981|0.957|2.3e-10|5.1e-05|1.2e+06| 8.499798e+05 -8.107021e+03| 0:0:00| chol  2↙
2
 7|0.840|1.000|2.9e-10|1.7e-06|4.0e+05| 3.468344e+05 -7.484343e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|7.9e-11|8.4e-07|2.9e+04| 2.216391e+04 -5.142250e+03| 0:0:00| chol  1↙
2
 9|0.549|1.000|2.3e-10|4.2e-07|1.9e+04| 1.603751e+04 -2.589017e+03| 0:0:00| chol  1↙
2
10|1.000|0.938|3.3e-10|2.2e-07|7.8e+03| 6.073336e+03 -1.579676e+03| 0:0:00| chol  2↙
2
11|1.000|0.829|4.4e-10|1.3e-07|3.3e+03| 2.084052e+03 -1.213665e+03| 0:0:00| chol  2↙
2
12|0.738|1.000|1.1e-10|5.3e-08|1.5e+03| 3.681300e+02 -1.167803e+03| 0:0:00| chol  2↙
2
13|1.000|0.827|8.1e-11|3.1e-08|6.5e+02|-3.422203e+02 -9.906472e+02| 0:0:00| chol  2↙
2
14|0.845|1.000|1.1e-11|1.3e-08|1.3e+02|-8.402360e+02 -9.737601e+02| 0:0:00| chol  2↙
2
15|1.000|0.819|1.1e-10|7.8e-09|4.9e+01|-9.143583e+02 -9.628138e+02| 0:0:00| chol  2↙
2
16|0.832|1.000|2.4e-11|3.3e-09|9.0e+00|-9.528346e+02 -9.616131e+02| 0:0:00| chol  2↙
2
17|1.000|0.658|1.4e-09|2.2e-09|4.3e+00|-9.569053e+02 -9.610289e+02| 0:0:00| chol  2↙
2
18|0.801|1.000|5.8e-10|8.3e-10|1.3e+00|-9.598116e+02 -9.610627e+02| 0:0:00| chol  2↙
2
19|1.000|0.622|1.8e-09|5.8e-10|5.2e-01|-9.604972e+02 -9.609889e+02| 0:0:00| chol  2↙
2
20|0.939|0.974|3.2e-10|7.2e-11|5.5e-02|-9.609418e+02 -9.609931e+02| 0:0:00| chol  2↙
3
21|0.985|0.983|3.5e-11|2.7e-12|9.3e-04|-9.609928e+02 -9.609936e+02| 0:0:00| chol  6↙
5
22|0.988|0.987|2.9e-10|5.4e-14|1.2e-05|-9.609936e+02 -9.609936e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.60993603e+02
 dual   objective value = -9.60993608e+02
 gap := trace(XZ)       = 1.24e-05
 relative gap           = 6.45e-09
 actual relative gap    = 2.53e-09
 rel. primal infeas     = 2.87e-10
 rel. dual   infeas     = 5.45e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.4e-10  0.0e+00  7.7e-14  0.0e+00  2.5e-09  6.5e-09
```

```
------------------------------------------------------------------

ans =

  960.9936

Epoch... 267
Epoch... 268

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.8e+00|4.1e+09| 1.342714e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.942|0.939|5.8e-02|6.0e-01|4.8e+08| 1.164335e+08  4.809588e+06| 0:0:00| chol  1↙
1
 2|0.665|0.658|1.9e-02|2.0e-01|2.4e+08| 8.819319e+07  4.439068e+06| 0:0:00| chol  1↙
1
 3|0.654|0.652|6.7e-03|7.1e-02|1.3e+08| 6.569215e+07  3.232178e+06| 0:0:00| chol  1↙
1
 4|0.803|0.775|1.3e-03|1.6e-02|6.8e+07| 4.011165e+07  1.107962e+06| 0:0:00| chol  1↙
2
 5|1.000|0.928|1.2e-09|1.2e-03|1.8e+07| 1.180789e+07 -7.419203e+04| 0:0:00| chol  1↙
1
 6|0.981|0.957|2.3e-10|5.0e-05|1.2e+06| 8.428499e+05 -8.076268e+03| 0:0:00| chol  2↙
2
 7|0.841|1.000|2.8e-10|1.7e-06|4.0e+05| 3.451458e+05 -7.490769e+03| 0:0:00| chol  1↙
2
 8|1.000|0.988|7.9e-11|8.5e-07|2.6e+04| 1.931461e+04 -5.096718e+03| 0:0:00| chol  2↙
2
 9|0.369|1.000|1.3e-10|4.2e-07|2.0e+04| 1.548174e+04 -3.934886e+03| 0:0:00| chol  1↙
1
10|1.000|0.772|1.6e-10|2.6e-07|8.7e+03| 6.784433e+03 -1.758544e+03| 0:0:00| chol  2↙
2
11|1.000|0.990|2.2e-10|1.1e-07|3.2e+03| 2.005280e+03 -1.162114e+03| 0:0:00| chol  1↙
2
12|0.869|1.000|2.4e-10|5.3e-08|1.2e+03| 1.211417e+02 -1.105254e+03| 0:0:00| chol  1↙
2
13|1.000|0.985|3.8e-11|2.7e-08|4.4e+02|-5.405315e+02 -9.758634e+02| 0:0:00| chol  1↙
2
14|0.889|1.000|6.8e-11|1.3e-08|8.0e+01|-8.866338e+02 -9.653385e+02| 0:0:00| chol  2↙
2
15|1.000|0.937|2.2e-10|7.0e-09|2.3e+01|-9.381620e+02 -9.608815e+02| 0:0:00| chol  2↙
2
16|0.772|1.000|2.5e-10|3.3e-09|6.9e+00|-9.535658e+02 -9.603176e+02| 0:0:00| chol  2↙
2
17|1.000|0.924|5.5e-10|1.8e-09|2.7e+00|-9.574628e+02 -9.600597e+02| 0:0:00| chol  2↙
```

```
2
18|0.839|1.000|1.2e-10|8.6e-10|7.3e-01|-9.594035e+02 -9.600883e+02| 0:0:00| chol  3↙
2
19|1.000|1.000|1.7e-11|4.4e-10|1.6e-01|-9.599534e+02 -9.600845e+02| 0:0:00| chol  2↙
2
20|0.979|0.982|5.6e-11|1.1e-11|3.5e-03|-9.600998e+02 -9.601026e+02| 0:0:00| chol  3↙
3
21|0.987|0.987|2.6e-10|2.3e-13|5.1e-05|-9.601029e+02 -9.601029e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.60102895e+02
 dual   objective value = -9.60102933e+02
 gap := trace(XZ)       = 5.06e-05
 relative gap           = 2.64e-08
 actual relative gap    = 1.97e-08
 rel. primal infeas     = 2.64e-10
 rel. dual   infeas     = 2.29e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.0e-10  0.0e+00  3.2e-13  0.0e+00  2.0e-08  2.6e-08
-------------------------------------------------------------------

ans =

  960.1029

Epoch... 269
Epoch... 270

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+00|3.9e+09| 1.276798e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.942|0.939|5.8e-02|5.9e-01|4.6e+08| 1.110148e+08  4.780844e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.0e-02|2.0e-01|2.3e+08| 8.416547e+07  4.415957e+06| 0:0:00| chol  1↙
1
 3|0.650|0.649|6.8e-03|7.2e-02|1.3e+08| 6.291344e+07  3.230994e+06| 0:0:00| chol  1↙
1
 4|0.795|0.771|1.4e-03|1.6e-02|6.6e+07| 3.880447e+07  1.136510e+06| 0:0:00| chol  1↙
2
 5|1.000|0.924|4.9e-09|1.2e-03|1.8e+07| 1.201433e+07 -7.038498e+04| 0:0:00| chol  2↙
```

```
2
 6|0.981|0.957|2.3e-10|5.4e-05|1.2e+06| 8.500865e+05 -7.797973e+03| 0:0:00| chol  2↙
2
 7|0.835|0.988|4.2e-10|1.9e-06|4.0e+05| 3.465957e+05 -7.321292e+03| 0:0:00| chol  1↙
2
 8|1.000|1.000|7.4e-11|8.4e-07|3.0e+04| 2.387805e+04 -5.126498e+03| 0:0:00| chol  2↙
2
 9|0.565|1.000|2.5e-10|4.2e-07|2.0e+04| 1.703184e+04 -2.511902e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|3.5e-10|2.1e-07|8.1e+03| 6.331238e+03 -1.624899e+03| 0:0:00| chol  2↙
2
11|1.000|0.694|5.1e-10|1.4e-07|3.7e+03| 2.417829e+03 -1.216231e+03| 0:0:00| chol  1↙
2
12|0.746|1.000|1.4e-10|5.3e-08|1.5e+03| 2.958788e+02 -1.173219e+03| 0:0:00| chol  2↙
2
13|1.000|0.756|6.2e-11|3.3e-08|6.5e+02|-3.361812e+02 -9.848054e+02| 0:0:00| chol  2↙
2
14|0.853|1.000|1.4e-11|1.3e-08|1.2e+02|-8.498718e+02 -9.677461e+02| 0:0:00| chol  2↙
2
15|1.000|0.776|2.8e-10|8.1e-09|4.5e+01|-9.118249e+02 -9.564028e+02| 0:0:00| chol  2↙
2
16|0.827|1.000|5.6e-11|3.3e-09|8.5e+00|-9.468406e+02 -9.551583e+02| 0:0:00| chol  2↙
2
17|1.000|0.662|1.4e-10|2.2e-09|4.0e+00|-9.507152e+02 -9.545948e+02| 0:0:00| chol  2↙
2
18|0.800|1.000|9.7e-10|8.3e-10|1.2e+00|-9.534652e+02 -9.546267e+02| 0:0:00| chol  2↙
3
19|1.000|0.609|4.8e-09|5.9e-10|4.9e-01|-9.541131e+02 -9.545647e+02| 0:0:00| chol  2↙
2
20|0.943|0.969|3.4e-10|8.0e-11|4.6e-02|-9.545286e+02 -9.545701e+02| 0:0:00| chol  2↙
2
21|0.985|0.983|2.9e-10|2.6e-12|7.6e-04|-9.545705e+02 -9.545711e+02| 0:0:00| chol  6↙
5
22|0.980|0.987|1.8e-09|5.9e-14|1.6e-05|-9.545711e+02 -9.545711e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.54571083e+02
 dual   objective value = -9.54571097e+02
 gap := trace(XZ)       = 1.57e-05
 relative gap           = 8.23e-09
 actual relative gap    = 7.21e-09
 rel. primal infeas     = 1.82e-09
 rel. dual   infeas     = 5.92e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.9e-09  0.0e+00  8.4e-14  0.0e+00  7.2e-09  8.2e-09
-----------------------------------------------------------------

ans =
```

```
  954.5711

Epoch... 271
Epoch... 272

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+00|3.9e+09| 1.272842e+08  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.942|0.939|5.8e-02|5.9e-01|4.6e+08| 1.106952e+08  4.755872e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|1.9e-02|2.0e-01|2.3e+08| 8.387548e+07  4.392131e+06| 0:0:00| chol  1↙
1
 3|0.650|0.649|6.8e-03|7.1e-02|1.3e+08| 6.267189e+07  3.212136e+06| 0:0:00| chol  1↙
2
 4|0.796|0.771|1.4e-03|1.6e-02|6.6e+07| 3.862569e+07  1.127561e+06| 0:0:00| chol  1↙
2
 5|1.000|0.924|4.8e-09|1.2e-03|1.8e+07| 1.191708e+07 -7.014727e+04| 0:0:00| chol  1↙
1
 6|0.981|0.957|2.4e-10|5.3e-05|1.2e+06| 8.438675e+05 -7.729683e+03| 0:0:00| chol  2↙
2
 7|0.836|0.991|3.8e-10|1.8e-06|4.0e+05| 3.447366e+05 -7.300137e+03| 0:0:00| chol  2↙
1
 8|1.000|1.000|7.3e-11|8.4e-07|3.0e+04| 2.308685e+04 -5.093233e+03| 0:0:00| chol  1↙
2
 9|0.561|1.000|2.5e-10|4.2e-07|2.0e+04| 1.660933e+04 -2.509243e+03| 0:0:00| chol  2↙
2
10|1.000|1.000|3.0e-10|2.1e-07|7.8e+03| 6.166628e+03 -1.558731e+03| 0:0:00| chol  2↙
2
11|1.000|0.748|5.1e-10|1.3e-07|3.4e+03| 2.194251e+03 -1.213218e+03| 0:0:00| chol  2↙
2
12|0.740|1.000|1.5e-10|5.3e-08|1.6e+03| 3.920713e+02 -1.170983e+03| 0:0:00| chol  2↙
2
13|1.000|0.792|1.7e-10|3.2e-08|6.8e+02|-3.071777e+02 -9.859162e+02| 0:0:00| chol  2↙
2
14|0.842|1.000|2.0e-11|1.3e-08|1.4e+02|-8.305103e+02 -9.681184e+02| 0:0:00| chol  2↙
2
15|1.000|0.789|7.7e-10|8.0e-09|5.2e+01|-9.040936e+02 -9.558724e+02| 0:0:00| chol  2↙
2
16|0.837|1.000|3.2e-11|3.3e-09|9.2e+00|-9.455679e+02 -9.545490e+02| 0:0:00| chol  2↙
2
17|1.000|0.655|4.5e-11|2.2e-09|4.4e+00|-9.496649e+02 -9.538945e+02| 0:0:00| chol  2↙
2
18|0.800|1.000|1.9e-11|8.3e-10|1.3e+00|-9.526651e+02 -9.539191e+02| 0:0:00| chol  2↙
2
19|1.000|0.597|4.2e-09|5.9e-10|5.3e-01|-9.533501e+02 -9.538471e+02| 0:0:00| chol  2↙
```

```
2
20|0.941|0.971|2.7e-10|6.3e-11|5.4e-02|-9.537999e+02 -9.538498e+02| 0:0:00| chol  3↙
3
21|0.983|0.980|2.8e-10|2.9e-12|1.0e-03|-9.538494e+02 -9.538503e+02| 0:0:00| chol  5↙
6
22|0.980|0.985|7.6e-09|7.9e-14|2.2e-05|-9.538503e+02 -9.538503e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.53850257e+02
 dual   objective value = -9.53850285e+02
 gap := trace(XZ)       = 2.19e-05
 relative gap           = 1.15e-08
 actual relative gap    = 1.45e-08
 rel. primal infeas     = 7.58e-09
 rel. dual   infeas     = 7.86e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.2e-08  0.0e+00  1.1e-13  0.0e+00  1.5e-08  1.1e-08
-------------------------------------------------------------------

ans =

  953.8503

Epoch... 273
Epoch... 274

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+00|3.9e+09| 1.252867e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.942|0.939|5.8e-02|5.9e-01|4.5e+08| 1.090534e+08  4.736155e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|2.0e-02|2.0e-01|2.3e+08| 8.264651e+07  4.374703e+06| 0:0:00| chol  1↙
1
 3|0.649|0.648|6.8e-03|7.1e-02|1.2e+08| 6.180721e+07  3.203206e+06| 0:0:00| chol  1↙
1
 4|0.794|0.771|1.4e-03|1.6e-02|6.5e+07| 3.818745e+07  1.131527e+06| 0:0:00| chol  2↙
2
 5|1.000|0.924|4.7e-09|1.2e-03|1.8e+07| 1.192088e+07 -6.867129e+04| 0:0:00| chol  2↙
2
 6|0.981|0.957|2.3e-10|5.4e-05|1.2e+06| 8.429989e+05 -7.622754e+03| 0:0:00| chol  2↙
```

```
2
 7|0.833|0.986|5.0e-10|1.9e-06|4.0e+05| 3.444038e+05 -7.242636e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|7.2e-11|8.4e-07|3.0e+04| 2.354258e+04 -5.081538e+03| 0:0:00| chol  2↙
2
 9|0.549|1.000|2.3e-10|4.2e-07|2.0e+04| 1.704204e+04 -2.579313e+03| 0:0:00| chol  1↙
2
10|1.000|0.956|2.6e-10|2.2e-07|8.1e+03| 6.409377e+03 -1.556849e+03| 0:0:00| chol  2↙
2
11|1.000|0.959|4.3e-10|1.1e-07|3.3e+03| 2.080986e+03 -1.207513e+03| 0:0:00| chol  1↙
2
12|0.740|1.000|9.0e-11|5.3e-08|1.6e+03| 4.328621e+02 -1.148155e+03| 0:0:00| chol  2↙
2
13|1.000|0.888|1.8e-10|2.9e-08|6.5e+02|-3.379925e+02 -9.820395e+02| 0:0:00| chol  2↙
2
14|0.842|1.000|3.1e-11|1.3e-08|1.4e+02|-8.248146e+02 -9.655035e+02| 0:0:00| chol  2↙
2
15|1.000|0.859|2.5e-10|7.5e-09|5.0e+01|-9.055322e+02 -9.551441e+02| 0:0:00| chol  2↙
2
16|0.828|1.000|3.7e-11|3.3e-09|9.4e+00|-9.447812e+02 -9.539602e+02| 0:0:00| chol  2↙
2
17|1.000|0.670|1.9e-10|2.2e-09|4.4e+00|-9.490770e+02 -9.533497e+02| 0:0:00| chol  2↙
2
18|0.800|1.000|5.4e-10|8.3e-10|1.4e+00|-9.520688e+02 -9.533805e+02| 0:0:00| chol  3↙
2
19|1.000|0.603|4.1e-09|6.0e-10|5.4e-01|-9.527991e+02 -9.533099e+02| 0:0:00| chol  2↙
2
20|0.943|0.969|5.7e-11|8.3e-11|5.3e-02|-9.532634e+02 -9.533116e+02| 0:0:00| chol  3↙
3
21|0.984|0.983|2.2e-11|2.9e-12|9.4e-04|-9.533114e+02 -9.533122e+02| 0:0:00| chol  8↙
8
22|0.988|0.988|6.9e-10|5.6e-14|1.2e-05|-9.533122e+02 -9.533122e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.53312213e+02
 dual   objective value = -9.53312218e+02
 gap := trace(XZ)       = 1.22e-05
 relative gap           = 6.42e-09
 actual relative gap    = 2.88e-09
 rel. primal infeas     = 6.86e-10
 rel. dual   infeas     = 5.56e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.1e-09  0.0e+00  7.9e-14  0.0e+00  2.9e-09  6.4e-09
------------------------------------------------------------------

ans =

  953.3122
```

```
Epoch... 275
Epoch... 276

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.6e+00|4.2e+09| 1.373530e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.943|0.940|5.7e-02|5.7e-01|4.9e+08| 1.190169e+08  4.662168e+06| 0:0:00| chol  1↙
1
 2|0.669|0.662|1.9e-02|1.9e-01|2.4e+08| 8.953702e+07  4.291888e+06| 0:0:00| chol  1↙
1
 3|0.659|0.655|6.4e-03|6.7e-02|1.3e+08| 6.623688e+07  3.097356e+06| 0:0:00| chol  1↙
1
 4|0.815|0.780|1.2e-03|1.5e-02|6.7e+07| 3.977197e+07  1.014561e+06| 0:0:00| chol  2↙
1
 5|1.000|0.932|3.0e-09|1.0e-03|1.6e+07| 1.063553e+07 -7.069981e+04| 0:0:00| chol  1↙
1
 6|0.979|0.957|1.2e-09|4.4e-05|1.1e+06| 7.822121e+05 -7.553178e+03| 0:0:00| chol  2↙
2
 7|0.837|1.000|5.1e-10|1.7e-06|3.8e+05| 3.270265e+05 -7.404277e+03| 0:0:00| chol  2↙
1
 8|0.949|0.883|8.9e-11|9.4e-07|3.2e+04| 2.479182e+04 -5.014293e+03| 0:0:00| chol  2↙
1
 9|0.318|1.000|1.0e-10|4.2e-07|2.6e+04| 2.099351e+04 -3.821797e+03| 0:0:00| chol  2↙
2
10|1.000|0.836|2.5e-10|2.5e-07|1.1e+04| 9.305971e+03 -1.820283e+03| 0:0:00| chol  2↙
1
11|1.000|1.000|1.3e-10|1.1e-07|3.7e+03| 2.350880e+03 -1.323170e+03| 0:0:00| chol  1↙
2
12|1.000|0.993|1.5e-10|5.3e-08|1.2e+03| 1.670260e+02 -1.044922e+03| 0:0:00| chol  2↙
1
13|0.883|1.000|1.1e-10|2.6e-08|3.8e+02|-6.428368e+02 -1.025609e+03| 0:0:00| chol  2↙
2
14|1.000|0.972|3.9e-11|1.4e-08|1.3e+02|-8.582443e+02 -9.908272e+02| 0:0:00| chol  2↙
2
15|0.906|1.000|2.7e-10|6.6e-09|1.4e+01|-9.740820e+02 -9.880204e+02| 0:0:00| chol  2↙
2
16|1.000|0.762|2.2e-11|4.1e-09|5.8e+00|-9.813855e+02 -9.869311e+02| 0:0:00| chol  2↙
2
17|0.855|1.000|1.3e-09|1.7e-09|2.3e+00|-9.845728e+02 -9.868049e+02| 0:0:00| chol  3↙
2
18|1.000|1.000|5.1e-10|8.3e-10|6.7e-01|-9.861318e+02 -9.867516e+02| 0:0:00| chol  2↙
2
19|0.949|0.973|8.4e-11|4.3e-10|3.6e-02|-9.867475e+02 -9.867592e+02| 0:0:00| chol  2↙
2
20|0.987|0.987|3.9e-11|6.5e-12|5.0e-04|-9.867820e+02 -9.867822e+02| 0:0:00| chol  5↙
```

```
5
21|0.988|0.988|1.2e-10|8.9e-14|6.5e-06|-9.867825e+02 -9.867825e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.86782455e+02
 dual   objective value = -9.86782454e+02
 gap := trace(XZ)       = 6.50e-06
 relative gap           = 3.29e-09
 actual relative gap    = -2.47e-10
 rel. primal infeas     = 1.18e-10
 rel. dual   infeas     = 8.89e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.8e-10  0.0e+00  1.3e-13  0.0e+00  -2.5e-10  3.3e-09
-------------------------------------------------------------------

ans =

  986.7825

Epoch... 277
Epoch... 278

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.8e+00|4.9e+09| 1.612168e+08  0.000000e+00| 0:0:00| chol  2↙
1
 1|0.943|0.940|5.7e-02|5.9e-01|5.7e+08| 1.386412e+08  4.757356e+06| 0:0:00| chol  1↙
1
 2|0.678|0.670|1.8e-02|1.9e-01|2.8e+08| 1.038065e+08  4.363695e+06| 0:0:00| chol  1↙
1
 3|0.672|0.665|6.0e-03|6.5e-02|1.5e+08| 7.576534e+07  3.090279e+06| 0:0:00| chol  1↙
1
 4|0.846|0.793|9.2e-04|1.3e-02|7.3e+07| 4.365458e+07  9.074258e+05| 0:0:00| chol  1↙
1
 5|1.000|0.942|5.3e-10|7.8e-04|1.4e+07| 8.996558e+06 -6.085553e+04| 0:0:00| chol  1↙
2
 6|0.976|0.953|4.3e-10|3.7e-05|1.0e+06| 7.209788e+05 -7.440663e+03| 0:0:00| chol  2↙
2
 7|0.810|1.000|3.6e-10|1.7e-06|3.8e+05| 3.287628e+05 -7.526038e+03| 0:0:00| chol  2↙
1
 8|0.921|0.880|9.0e-11|9.5e-07|3.8e+04| 3.008185e+04 -4.918923e+03| 0:0:00| chol  1↙
```

```
2
 9|0.378|1.000|7.4e-11|4.2e-07|2.9e+04| 2.474409e+04 -3.568334e+03| 0:0:00| chol  1↙
1
10|1.000|0.891|8.5e-11|2.3e-07|1.2e+04| 1.008655e+04 -1.793239e+03| 0:0:00| chol  2↙
2
11|0.945|1.000|9.8e-11|1.1e-07|4.2e+03| 2.754148e+03 -1.439319e+03| 0:0:00| chol  1↙
2
12|1.000|0.978|5.5e-11|5.4e-08|1.5e+03| 3.850468e+02 -1.073734e+03| 0:0:00| chol  2↙
2
13|0.908|1.000|4.7e-11|2.6e-08|4.3e+02|-6.144923e+02 -1.043494e+03| 0:0:00| chol  2↙
2
14|1.000|0.991|8.9e-11|1.3e-08|1.4e+02|-8.635278e+02 -1.005484e+03| 0:0:00| chol  2↙
2
15|0.907|1.000|9.7e-12|6.6e-09|1.6e+01|-9.873922e+02 -1.002555e+03| 0:0:00| chol  2↙
2
16|1.000|0.784|3.4e-10|4.0e-09|6.0e+00|-9.957355e+02 -1.001490e+03| 0:0:00| chol  2↙
2
17|1.000|0.992|5.0e-10|1.7e-09|2.1e+00|-9.992983e+02 -1.001310e+03| 0:0:00| chol  3↙
3
18|0.879|1.000|5.2e-10|8.3e-10|7.3e-01|-1.000643e+03 -1.001323e+03| 0:0:00| chol  3↙
3
19|1.000|1.000|1.3e-10|4.2e-10|1.6e-01|-1.001182e+03 -1.001316e+03| 0:0:00| chol  2↙
2
20|0.975|0.980|7.2e-11|1.5e-11|4.4e-03|-1.001331e+03 -1.001334e+03| 0:0:00| chol  3↙
3
21|0.988|0.989|1.4e-11|2.7e-13|5.8e-05|-1.001334e+03 -1.001335e+03| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -1.00133448e+03
 dual   objective value = -1.00133453e+03
 gap := trace(XZ)       = 5.79e-05
 relative gap           = 2.89e-08
 actual relative gap    = 2.17e-08
 rel. primal infeas     = 1.37e-11
 rel. dual   infeas     = 2.67e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.9e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.9e-11  0.0e+00  3.8e-13  0.0e+00  2.2e-08  2.9e-08
------------------------------------------------------------------------

ans =

   1.0013e+03

Epoch... 279
Epoch... 280

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
```

```
*****************************************************************
   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|9.6e+00|4.3e+09| 1.415230e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.943|0.940|5.7e-02|5.7e-01|5.0e+08| 1.224602e+08  4.668969e+06| 0:0:00| chol  1↙
1
 2|0.671|0.664|1.9e-02|1.9e-01|2.5e+08| 9.201867e+07  4.293156e+06| 0:0:00| chol  1↙
1
 3|0.662|0.657|6.3e-03|6.6e-02|1.4e+08| 6.788716e+07  3.087564e+06| 0:0:00| chol  1↙
1
 4|0.821|0.782|1.1e-03|1.4e-02|6.8e+07| 4.046288e+07  9.934292e+05| 0:0:00| chol  1↙
2
 5|1.000|0.934|5.5e-10|9.5e-04|1.5e+07| 1.031932e+07 -6.823478e+04| 0:0:00| chol  1↙
2
 6|0.978|0.955|2.8e-10|4.4e-05|1.1e+06| 7.754788e+05 -7.497301e+03| 0:0:00| chol  2↙
2
 7|0.818|1.000|4.5e-10|1.7e-06|3.9e+05| 3.402850e+05 -7.414148e+03| 0:0:00| chol  1↙
1
 8|0.964|0.895|8.7e-11|9.3e-07|2.7e+04| 2.076317e+04 -4.989561e+03| 0:0:00| chol  2↙
2
 9|0.342|1.000|9.5e-11|4.2e-07|2.2e+04| 1.738783e+04 -3.670478e+03| 0:0:00| chol  1↙
2
10|1.000|0.826|2.2e-10|2.5e-07|9.5e+03| 7.677488e+03 -1.700892e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|8.9e-11|1.1e-07|3.1e+03| 1.881829e+03 -1.224156e+03| 0:0:00| chol  2↙
2
12|1.000|1.000|1.5e-10|5.3e-08|9.9e+02|-3.370231e+01 -1.020641e+03| 0:0:00| chol  1↙
1
13|0.946|1.000|1.5e-10|2.6e-08|2.6e+02|-7.308464e+02 -9.875470e+02| 0:0:00| chol  2↙
2
14|1.000|1.000|1.1e-10|1.3e-08|8.2e+01|-8.889518e+02 -9.701145e+02| 0:0:00| chol  2↙
2
15|0.906|0.953|1.4e-10|6.9e-09|8.7e+00|-9.594010e+02 -9.677330e+02| 0:0:00| chol  2↙
2
16|1.000|0.740|1.1e-09|4.3e-09|3.8e+00|-9.635614e+02 -9.671368e+02| 0:0:00| chol  2↙
2
17|0.894|1.000|7.3e-10|1.7e-09|1.5e+00|-9.656742e+02 -9.671059e+02| 0:0:00| chol  3↙
2
18|1.000|1.000|3.1e-10|8.9e-10|4.3e-01|-9.667194e+02 -9.670940e+02| 0:0:00| chol  2↙
2
19|0.962|0.975|9.8e-12|4.5e-10|1.8e-02|-9.671126e+02 -9.671050e+02| 0:0:00| chol  2↙
1
20|0.988|0.988|2.4e-10|5.8e-12|2.5e-04|-9.671284e+02 -9.671284e+02| 0:0:00| chol  4↙
8
21|0.987|0.987|4.0e-11|8.2e-14|3.6e-06|-9.671286e+02 -9.671286e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.67128628e+02
```

```
 dual   objective value = -9.67128627e+02
 gap := trace(XZ)       = 3.56e-06
 relative gap           = 1.84e-09
 actual relative gap    = -5.78e-10
 rel. primal infeas     = 4.04e-11
 rel. dual   infeas     = 8.21e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.7e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.1e-11  0.0e+00  1.2e-13  0.0e+00  -5.8e-10  1.8e-09
------------------------------------------------------------------

ans =

  967.1286

Epoch... 281
Epoch... 282

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.6e+00|4.2e+09| 1.359549e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.943|0.940|5.7e-02|5.7e-01|4.8e+08| 1.179051e+08  4.663654e+06| 0:0:00| chol  1↙
1
 2|0.669|0.661|1.9e-02|1.9e-01|2.4e+08| 8.869607e+07  4.293047e+06| 0:0:00| chol  1↙
1
 3|0.658|0.654|6.4e-03|6.7e-02|1.3e+08| 6.567710e+07  3.106195e+06| 0:0:00| chol  1↙
1
 4|0.812|0.778|1.2e-03|1.5e-02|6.7e+07| 3.960928e+07  1.032687e+06| 0:0:00| chol  2↙
2
 5|1.000|0.931|7.9e-10|1.0e-03|1.6e+07| 1.092523e+07 -7.086266e+04| 0:0:00| chol  1↙
1
 6|0.979|0.956|1.0e-09|4.6e-05|1.1e+06| 8.016530e+05 -7.650265e+03| 0:0:00| chol  2↙
2
 7|0.827|1.000|3.3e-10|1.7e-06|4.0e+05| 3.429986e+05 -7.361737e+03| 0:0:00| chol  2↙
1
 8|0.971|0.907|8.5e-11|9.2e-07|2.7e+04| 2.027232e+04 -4.983339e+03| 0:0:00| chol  1↙
1
 9|0.317|1.000|1.4e-10|4.2e-07|2.2e+04| 1.695843e+04 -4.121419e+03| 0:0:00| chol  2↙
2
10|1.000|0.789|2.3e-10|2.6e-07|9.6e+03| 7.701514e+03 -1.745055e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|9.4e-11|1.1e-07|3.4e+03| 2.194692e+03 -1.138264e+03| 0:0:00| chol  2↙
```

```
2
12|0.914|1.000|2.0e-10|5.3e-08|1.2e+03| 1.495624e+02 -1.069533e+03| 0:0:00| chol  1↙
2
13|1.000|0.992|1.5e-10|2.7e-08|4.2e+02|-5.225672e+02 -9.442723e+02| 0:0:00| chol  2↙
2
14|0.891|1.000|1.2e-10|1.3e-08|7.6e+01|-8.593646e+02 -9.341920e+02| 0:0:00| chol  2↙
2
15|1.000|0.940|6.5e-11|7.0e-09|2.2e+01|-9.089435e+02 -9.301404e+02| 0:0:00| chol  2↙
2
16|0.768|1.000|8.6e-11|3.3e-09|6.9e+00|-9.228912e+02 -9.296076e+02| 0:0:00| chol  2↙
2
17|1.000|0.968|1.7e-09|1.7e-09|2.6e+00|-9.268569e+02 -9.293640e+02| 0:0:00| chol  2↙
2
18|0.844|1.000|4.8e-10|8.5e-10|7.0e-01|-9.287379e+02 -9.293895e+02| 0:0:00| chol  2↙
3
19|1.000|1.000|1.0e-10|4.5e-10|1.4e-01|-9.292732e+02 -9.293901e+02| 0:0:00| chol  2↙
2
20|0.982|0.978|4.4e-11|1.5e-11|2.9e-03|-9.294053e+02 -9.294074e+02| 0:0:00| chol  1↙
3
21|0.988|0.987|2.7e-11|2.5e-13|3.8e-05|-9.294078e+02 -9.294078e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -9.29407775e+02
 dual   objective value = -9.29407799e+02
 gap := trace(XZ)       = 3.84e-05
 relative gap           = 2.07e-08
 actual relative gap    = 1.25e-08
 rel. primal infeas     = 2.69e-11
 rel. dual   infeas     = 2.52e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.7e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.1e-11  0.0e+00  3.6e-13  0.0e+00  1.3e-08  2.1e-08
-------------------------------------------------------------------

ans =

  929.4078

Epoch... 283
Epoch... 284

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+00|4.1e+09| 1.332481e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.944|0.941|5.6e-02|5.7e-01|4.7e+08| 1.157141e+08  4.698808e+06| 0:0:00| chol  1↙
1
 2|0.667|0.660|1.9e-02|1.9e-01|2.4e+08| 8.699988e+07  4.327356e+06| 0:0:00| chol  1↙
1
 3|0.655|0.652|6.5e-03|6.8e-02|1.3e+08| 6.455487e+07  3.143140e+06| 0:0:00| chol  1↙
1
 4|0.806|0.776|1.3e-03|1.5e-02|6.6e+07| 3.922625e+07  1.067042e+06| 0:0:00| chol  1↙
2
 5|1.000|0.929|1.2e-09|1.1e-03|1.7e+07| 1.131630e+07 -7.077270e+04| 0:0:00| chol  2↙
1
 6|0.980|0.955|5.7e-10|4.9e-05|1.2e+06| 8.191648e+05 -7.239599e+03| 0:0:00| chol  2↙
2
 7|0.823|1.000|2.7e-10|1.7e-06|4.0e+05| 3.495079e+05 -7.095244e+03| 0:0:00| chol  2↙
1
 8|0.987|0.956|8.6e-11|8.8e-07|2.5e+04| 1.922921e+04 -4.866718e+03| 0:0:00| chol  2↙
2
 9|0.316|1.000|8.7e-11|4.2e-07|2.1e+04| 1.590381e+04 -4.179936e+03| 0:0:00| chol  1↙
1
10|0.989|0.768|1.1e-10|2.6e-07|9.2e+03| 7.350699e+03 -1.723354e+03| 0:0:00| chol  1↙
2
11|1.000|0.971|1.5e-10|1.1e-07|3.5e+03| 2.389057e+03 -1.110034e+03| 0:0:00| chol  2↙
2
12|0.879|1.000|1.8e-10|5.3e-08|1.3e+03| 2.751987e+02 -1.054744e+03| 0:0:00| chol  2↙
2
13|1.000|0.986|6.0e-11|2.7e-08|4.6e+02|-4.544514e+02 -9.167530e+02| 0:0:00| chol  2↙
2
14|0.890|1.000|2.6e-10|1.3e-08|8.6e+01|-8.203608e+02 -9.055860e+02| 0:0:00| chol  2↙
2
15|1.000|0.950|1.3e-10|6.9e-09|2.5e+01|-8.764997e+02 -9.009689e+02| 0:0:00| chol  2↙
2
16|0.776|1.000|2.1e-10|3.3e-09|7.1e+00|-8.935377e+02 -9.004235e+02| 0:0:00| chol  2↙
2
17|1.000|0.857|6.3e-09|1.9e-09|2.8e+00|-8.974350e+02 -9.001734e+02| 0:0:00| chol  2↙
2
18|0.833|1.000|5.8e-10|8.8e-10|8.1e-01|-8.994510e+02 -9.002104e+02| 0:0:00| chol  3↙
3
19|1.000|0.848|1.2e-10|5.7e-10|2.5e-01|-8.999707e+02 -9.001906e+02| 0:0:00| chol  2↙
2
20|0.952|0.967|4.0e-11|8.2e-11|1.5e-02|-9.001968e+02 -9.002067e+02| 0:0:00| chol  2↙
2
21|0.988|0.988|1.7e-12|1.3e-12|2.0e-04|-9.002093e+02 -9.002094e+02| 0:0:00| chol 24↙
12
  stop: primal infeas has deteriorated too much, 1.2e-06
22|0.989|0.989|1.7e-12|1.3e-12|2.0e-04|-9.002093e+02 -9.002094e+02| 0:0:00|
-----------------------------------------------------------------
 number of iterations   = 22
 primal objective value = -9.00209315e+02
 dual   objective value = -9.00209436e+02
 gap := trace(XZ)       = 1.96e-04
 relative gap           = 1.09e-07
 actual relative gap    = 6.72e-08
```

```
 rel. primal infeas     = 1.70e-12
 rel. dual   infeas     = 1.31e-12
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       = -7
 DIMACS errors: 2.6e-12  0.0e+00  1.9e-12  0.0e+00  6.7e-08  1.1e-07
------------------------------------------------------------------

ans =

  900.2095

Epoch... 285
Epoch... 286

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.5e+00|4.2e+09| 1.366769e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.944|0.942|5.6e-02|5.6e-01|4.8e+08| 1.185869e+08  4.587278e+06| 0:0:00| chol  2↙
1
 2|0.671|0.663|1.8e-02|1.9e-01|2.4e+08| 8.867186e+07  4.215132e+06| 0:0:00| chol  1↙
1
 3|0.660|0.656|6.2e-03|6.4e-02|1.3e+08| 6.540507e+07  3.039136e+06| 0:0:00| chol  1↙
2
 4|0.816|0.780|1.1e-03|1.4e-02|6.6e+07| 3.917162e+07  9.938304e+05| 0:0:00| chol  2↙
2
 5|1.000|0.932|3.6e-09|9.6e-04|1.6e+07| 1.039281e+07 -6.685022e+04| 0:0:00| chol  1↙
2
 6|0.979|0.954|3.5e-10|4.4e-05|1.1e+06| 7.681803e+05 -6.735312e+03| 0:0:00| chol  2↙
2
 7|0.813|1.000|5.4e-10|1.7e-06|3.9e+05| 3.354688e+05 -6.823293e+03| 0:0:00| chol  1↙
1
 8|0.970|0.908|8.3e-11|9.2e-07|2.6e+04| 1.952379e+04 -4.664901e+03| 0:0:00| chol  2↙
1
 9|0.298|1.000|6.6e-11|4.2e-07|2.1e+04| 1.661336e+04 -3.764920e+03| 0:0:00| chol  1↙
1
10|1.000|0.801|2.0e-10|2.5e-07|9.5e+03| 7.693218e+03 -1.620103e+03| 0:0:00| chol  1↙
1
11|1.000|1.000|7.5e-11|1.1e-07|3.2e+03| 2.135959e+03 -1.075624e+03| 0:0:00| chol  1↙
2
12|1.000|1.000|8.6e-11|5.3e-08|1.0e+03| 3.172155e+01 -9.603903e+02| 0:0:00| chol  2↙
1
13|1.000|0.984|4.4e-11|2.7e-08|3.2e+02|-5.556384e+02 -8.700013e+02| 0:0:00| chol  2↙
```

```
2
14|0.891|1.000|9.5e-12|1.3e-08|5.6e+01|-8.084635e+02 -8.636346e+02| 0:0:00| chol  2↙
2
15|1.000|0.917|1.1e-09|7.1e-09|1.6e+01|-8.449590e+02 -8.607451e+02| 0:0:00| chol  2↙
2
16|0.787|1.000|2.7e-10|3.3e-09|4.9e+00|-8.557797e+02 -8.604984e+02| 0:0:00| chol  3↙
2
17|1.000|0.903|1.4e-09|1.8e-09|1.9e+00|-8.586359e+02 -8.604188e+02| 0:0:00| chol  2↙
3
18|0.873|1.000|8.6e-10|8.3e-10|3.8e-01|-8.601357e+02 -8.604646e+02| 0:0:00| chol  3↙
3
19|1.000|0.892|2.9e-09|4.7e-10|1.2e-01|-8.603761e+02 -8.604730e+02| 0:0:00| chol  3↙
2
20|0.979|0.983|2.3e-09|1.3e-11|3.0e-03|-8.604956e+02 -8.604979e+02| 0:0:00| chol  5↙
4
21|0.987|0.989|1.7e-09|2.1e-13|4.3e-05|-8.604983e+02 -8.604983e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.60498285e+02
 dual   objective value = -8.60498320e+02
 gap := trace(XZ)       = 4.29e-05
 relative gap           = 2.49e-08
 actual relative gap    = 2.06e-08
 rel. primal infeas     = 1.71e-09
 rel. dual   infeas     = 2.10e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.7e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.6e-09  0.0e+00  3.0e-13  0.0e+00  2.1e-08  2.5e-08
-------------------------------------------------------------------

ans =

  860.4983

Epoch... 287
Epoch... 288

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.4e+00|4.6e+09| 1.510581e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.945|0.943|5.5e-02|5.4e-01|5.2e+08| 1.304553e+08  4.486791e+06| 0:0:00| chol  1↙
```

```
1
 2|0.679|0.670|1.8e-02|1.8e-01|2.6e+08| 9.678532e+07  4.107509e+06| 0:0:00| chol  1↙
1
 3|0.671|0.664|5.8e-03|6.0e-02|1.4e+08| 7.046740e+07  2.910694e+06| 0:0:00| chol  1↙
1
 4|0.844|0.792|9.0e-04|1.2e-02|6.8e+07| 4.066337e+07  8.624665e+05| 0:0:00| chol  2↙
1
 5|1.000|0.940|6.1e-10|7.5e-04|1.3e+07| 8.381778e+06 -5.311540e+04| 0:0:00| chol  2↙
2
 6|0.976|0.951|6.9e-10|3.7e-05|9.7e+05| 6.798313e+05 -6.375764e+03| 0:0:00| chol  2↙
2
 7|0.790|1.000|3.0e-10|1.7e-06|3.7e+05| 3.161409e+05 -6.820472e+03| 0:0:00| chol  1↙
2
 8|0.950|0.894|9.9e-11|9.3e-07|2.9e+04| 2.219256e+04 -4.477574e+03| 0:0:00| chol  2↙
2
 9|0.376|1.000|1.2e-10|4.2e-07|2.2e+04| 1.830008e+04 -3.131101e+03| 0:0:00| chol  1↙
2
10|1.000|0.870|1.6e-10|2.4e-07|9.4e+03| 7.776244e+03 -1.519818e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.3e-10|1.1e-07|3.0e+03| 1.796603e+03 -1.167198e+03| 0:0:00| chol  2↙
2
12|1.000|0.966|5.2e-11|5.5e-08|1.0e+03| 1.287692e+02 -9.100555e+02| 0:0:00| chol  2↙
2
13|0.885|1.000|1.9e-10|2.6e-08|3.0e+02|-5.952358e+02 -8.897112e+02| 0:0:00| chol  2↙
2
14|1.000|0.977|4.0e-11|1.3e-08|9.9e+01|-7.675783e+02 -8.660511e+02| 0:0:00| chol  2↙
2
15|0.906|1.000|6.6e-11|6.6e-09|1.0e+01|-8.544474e+02 -8.642837e+02| 0:0:00| chol  2↙
2
16|1.000|0.729|1.1e-10|4.2e-09|4.4e+00|-8.595048e+02 -8.636698e+02| 0:0:00| chol  2↙
3
17|0.806|1.000|1.9e-09|1.7e-09|1.9e+00|-8.618619e+02 -8.636739e+02| 0:0:00| chol  3↙
3
18|1.000|0.998|3.5e-10|8.5e-10|6.7e-01|-8.630242e+02 -8.636462e+02| 0:0:00| chol  3↙
3
19|0.914|1.000|7.0e-10|4.5e-10|8.3e-02|-8.636065e+02 -8.636638e+02| 0:0:00| chol  3↙
3
20|1.000|0.955|2.8e-09|2.8e-11|4.6e-03|-8.636821e+02 -8.636851e+02| 0:0:00| chol  3↙
3
21|0.978|0.989|1.4e-11|4.6e-13|1.1e-04|-8.636860e+02 -8.636861e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.63686046e+02
 dual   objective value = -8.63686126e+02
 gap := trace(XZ)       = 1.07e-04
 relative gap           = 6.18e-08
 actual relative gap    = 4.64e-08
 rel. primal infeas     = 1.36e-11
 rel. dual   infeas     = 4.64e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.6e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
```

```
 termination code       =  0
 DIMACS errors: 2.0e-11  0.0e+00  6.6e-13  0.0e+00  4.6e-08  6.2e-08
------------------------------------------------------------------

ans =

  863.6861

Epoch... 289
Epoch... 290

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.5e+00|4.1e+09| 1.319683e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.945|0.942|5.5e-02|5.5e-01|4.6e+08| 1.147476e+08  4.521838e+06| 0:0:00| chol  2↙
1
 2|0.670|0.662|1.8e-02|1.8e-01|2.3e+08| 8.560343e+07  4.153831e+06| 0:0:00| chol  1↙
1
 3|0.658|0.654|6.2e-03|6.4e-02|1.3e+08| 6.318173e+07  2.998359e+06| 0:0:00| chol  1↙
2
 4|0.813|0.779|1.2e-03|1.4e-02|6.4e+07| 3.797340e+07  9.881577e+05| 0:0:00| chol  1↙
2
 5|1.000|0.931|3.6e-09|9.6e-04|1.5e+07| 1.030494e+07 -6.581165e+04| 0:0:00| chol  2↙
2
 6|0.979|0.955|3.3e-10|4.4e-05|1.1e+06| 7.584063e+05 -6.518391e+03| 0:0:00| chol  2↙
2
 7|0.820|1.000|4.4e-10|1.7e-06|3.7e+05| 3.248561e+05 -6.698905e+03| 0:0:00| chol  1↙
1
 8|0.965|0.900|7.9e-11|9.3e-07|2.6e+04| 2.009307e+04 -4.588415e+03| 0:0:00| chol  2↙
1
 9|0.301|1.000|6.5e-11|4.2e-07|2.1e+04| 1.714325e+04 -3.573078e+03| 0:0:00| chol  2↙
1
10|1.000|0.813|2.1e-10|2.5e-07|9.6e+03| 7.858474e+03 -1.607581e+03| 0:0:00| chol  2↙
1
11|1.000|1.000|9.1e-11|1.1e-07|3.2e+03| 2.078402e+03 -1.109171e+03| 0:0:00| chol  2↙
2
12|1.000|1.000|1.1e-10|5.3e-08|1.0e+03| 6.162715e+01 -9.406429e+02| 0:0:00| chol  1↙
1
13|1.000|1.000|1.2e-10|2.6e-08|2.5e+02|-6.362325e+02 -8.821949e+02| 0:0:00| chol  2↙
2
14|1.000|1.000|2.2e-10|1.3e-08|4.6e+01|-8.274244e+02 -8.727764e+02| 0:0:00| chol  2↙
2
15|0.940|0.893|1.1e-10|7.3e-09|8.3e+00|-8.629872e+02 -8.708480e+02| 0:0:00| chol  2↙
2
16|0.932|0.894|2.3e-10|3.7e-09|3.4e+00|-8.673724e+02 -8.705909e+02| 0:0:00| chol  2↙
```

```
3
17|1.000|1.000|1.0e-09|1.7e-09|1.3e+00|-8.694611e+02 -8.706151e+02| 0:0:00| chol  3↙
3
18|0.939|0.952|1.4e-09|9.2e-10|2.0e-01|-8.704740e+02 -8.706202e+02| 0:0:00| chol  3↙
3
19|1.000|0.979|4.1e-10|4.5e-10|1.8e-02|-8.706490e+02 -8.706408e+02| 0:0:00| chol  3↙
3
20|0.979|0.980|4.3e-10|9.6e-12|4.1e-04|-8.706641e+02 -8.706640e+02| 0:0:00| chol  6↙
6
21|0.766|0.978|1.9e-11|3.6e-13|8.9e-05|-8.706644e+02 -8.706644e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.70664369e+02
 dual   objective value = -8.70664436e+02
 gap := trace(XZ)       = 8.89e-05
 relative gap           = 5.10e-08
 actual relative gap    = 3.83e-08
 rel. primal infeas     = 1.89e-11
 rel. dual   infeas     = 3.57e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.7e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.1e-11  0.0e+00  5.0e-13  0.0e+00  3.8e-08  5.1e-08
-------------------------------------------------------------------

ans =

  870.6644

Epoch... 291
Epoch... 292

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.4e+00|4.0e+09| 1.312960e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.946|0.943|5.4e-02|5.4e-01|4.6e+08| 1.142230e+08  4.488912e+06| 0:0:00| chol  1↙
1
 2|0.670|0.663|1.8e-02|1.8e-01|2.3e+08| 8.506207e+07  4.122674e+06| 0:0:00| chol  1↙
1
 3|0.658|0.654|6.1e-03|6.3e-02|1.2e+08| 6.273464e+07  2.974559e+06| 0:0:00| chol  1↙
1
 4|0.814|0.780|1.1e-03|1.4e-02|6.4e+07| 3.766933e+07  9.780009e+05| 0:0:00| chol  2↙
```

```
2
 5|1.000|0.932|2.1e-09|9.5e-04|1.5e+07| 1.017338e+07 -6.509055e+04| 0:0:00| chol  1↙
2
 6|0.979|0.955|3.5e-10|4.3e-05|1.1e+06| 7.489145e+05 -6.313752e+03| 0:0:00| chol  2↙
2
 7|0.821|1.000|5.3e-10|1.7e-06|3.7e+05| 3.187093e+05 -6.606515e+03| 0:0:00| chol  1↙
1
 8|0.967|0.905|7.8e-11|9.2e-07|2.6e+04| 1.997062e+04 -4.529586e+03| 0:0:00| chol  1↙
2
 9|0.306|1.000|7.9e-11|4.2e-07|2.1e+04| 1.703015e+04 -3.372775e+03| 0:0:00| chol  1↙
1
10|1.000|0.830|2.3e-10|2.5e-07|9.5e+03| 7.810080e+03 -1.572147e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|6.2e-11|1.1e-07|3.1e+03| 1.981528e+03 -1.118335e+03| 0:0:00| chol  2↙
2
12|1.000|1.000|1.2e-10|5.3e-08|1.0e+03| 7.677178e+01 -9.150384e+02| 0:0:00| chol  2↙
1
13|0.936|1.000|1.2e-10|2.6e-08|2.7e+02|-6.153826e+02 -8.842999e+02| 0:0:00| chol  2↙
2
14|1.000|1.000|7.3e-11|1.3e-08|8.7e+01|-7.787949e+02 -8.653725e+02| 0:0:00| chol  2↙
2
15|0.906|0.967|6.3e-12|6.8e-09|9.1e+00|-8.543491e+02 -8.630560e+02| 0:0:00| chol  2↙
2
16|0.830|0.864|4.0e-09|3.8e-09|4.4e+00|-8.582810e+02 -8.625050e+02| 0:0:00| chol  3↙
2
17|1.000|1.000|4.6e-09|1.6e-09|1.7e+00|-8.608156e+02 -8.624420e+02| 0:0:00| chol  3↙
3
18|0.885|1.000|4.0e-10|8.3e-10|4.1e-01|-8.620855e+02 -8.624503e+02| 0:0:00| chol  3↙
3
19|1.000|1.000|9.9e-11|4.2e-10|6.1e-02|-8.624241e+02 -8.624611e+02| 0:0:00| chol  2↙
2
20|0.983|0.983|2.1e-11|8.7e-12|1.1e-03|-8.624820e+02 -8.624827e+02| 0:0:00| chol  5↙
3
21|0.989|0.989|4.0e-10|1.2e-13|1.4e-05|-8.624830e+02 -8.624830e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.62483042e+02
 dual   objective value = -8.62483049e+02
 gap := trace(XZ)       = 1.44e-05
 relative gap           = 8.37e-09
 actual relative gap    = 4.59e-09
 rel. primal infeas     = 3.99e-10
 rel. dual   infeas     = 1.21e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.6e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 6.6e-10  0.0e+00  1.7e-13  0.0e+00  4.6e-09  8.4e-09
------------------------------------------------------------------------

ans =
```

```
  862.4831

Epoch... 293
Epoch... 294

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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+00|3.5e+09| 1.105470e+08  0.000000e+00| 0:0:00| chol  1↙
2
 1|0.945|0.942|5.5e-02|5.6e-01|3.9e+08| 9.714354e+07  4.651371e+06| 0:0:00| chol  1↙
1
 2|0.658|0.652|1.9e-02|1.9e-01|2.0e+08| 7.298068e+07  4.292753e+06| 0:0:00| chol  1↙
1
 3|0.640|0.641|6.8e-03|7.0e-02|1.1e+08| 5.479053e+07  3.173648e+06| 0:0:00| chol  1↙
1
 4|0.776|0.763|1.5e-03|1.7e-02|5.9e+07| 3.452457e+07  1.181419e+06| 0:0:00| chol  1↙
2
 5|1.000|0.914|8.4e-10|1.4e-03|1.7e+07| 1.177959e+07 -4.822393e+04| 0:0:00| chol  2↙
1
 6|0.982|0.955|2.1e-10|6.5e-05|1.2e+06| 8.310936e+05 -5.512841e+03| 0:0:00| chol  2↙
2
 7|0.802|0.946|3.1e-10|4.1e-06|4.1e+05| 3.484238e+05 -6.028266e+03| 0:0:00| chol  1↙
1
 8|1.000|1.000|8.6e-11|8.4e-07|4.1e+04| 3.394390e+04 -4.741666e+03| 0:0:00| chol  2↙
2
 9|0.663|0.831|2.4e-10|4.9e-07|2.4e+04| 2.064548e+04 -2.466748e+03| 0:0:00| chol  1↙
2
10|0.875|1.000|1.6e-10|2.1e-07|1.2e+04| 9.699149e+03 -1.784392e+03| 0:0:00| chol  2↙
2
11|1.000|0.938|2.5e-10|1.1e-07|4.4e+03| 3.218099e+03 -1.108832e+03| 0:0:00| chol  2↙
2
12|0.848|1.000|4.9e-11|5.3e-08|1.7e+03| 6.577628e+02 -1.031908e+03| 0:0:00| chol  2↙
1
13|1.000|0.969|5.0e-11|2.7e-08|6.1e+02|-2.465796e+02 -8.581354e+02| 0:0:00| chol  2↙
2
14|0.882|1.000|2.5e-10|1.3e-08|1.3e+02|-7.147607e+02 -8.435586e+02| 0:0:00| chol  2↙
2
15|1.000|0.959|1.0e-10|6.9e-09|4.0e+01|-7.963347e+02 -8.357862e+02| 0:0:00| chol  2↙
2
16|0.827|1.000|3.3e-11|3.3e-09|7.6e+00|-8.275388e+02 -8.349838e+02| 0:0:00| chol  2↙
2
17|1.000|0.635|1.4e-09|2.3e-09|3.7e+00|-8.310711e+02 -8.346362e+02| 0:0:00| chol  2↙
2
18|0.812|1.000|5.8e-10|8.3e-10|1.1e+00|-8.336036e+02 -8.346982e+02| 0:0:00| chol  3↙
3
19|1.000|0.775|1.8e-09|5.2e-10|4.6e-01|-8.341928e+02 -8.346237e+02| 0:0:00| chol  2↙
```

```
2
20|0.913|1.000|1.4e-09|6.3e-11|4.5e-02|-8.346016e+02 -8.346427e+02| 0:0:00| chol  3↙
3
21|1.000|0.822|2.2e-09|1.8e-11|4.2e-03|-8.346401e+02 -8.346432e+02| 0:0:00| chol  4↙
4
22|0.965|0.950|3.7e-10|1.2e-12|1.9e-04|-8.346432e+02 -8.346434e+02| 0:0:00| chol
  warning: symqmr failed: 0.3
  switch to LU factor. lu 29   1
23|0.728|0.978|6.6e-11|8.9e-14|4.0e-05|-8.346433e+02 -8.346434e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 23
 primal objective value = -8.34643329e+02
 dual   objective value = -8.34643360e+02
 gap := trace(XZ)       = 3.96e-05
 relative gap           = 2.37e-08
 actual relative gap    = 1.85e-08
 rel. primal infeas     = 6.56e-11
 rel. dual   infeas     = 8.92e-14
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.8e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.15
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.3e-10  0.0e+00  1.3e-13  0.0e+00  1.9e-08  2.4e-08
-------------------------------------------------------------------

ans =

  834.6434

Epoch... 295
Epoch... 296

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.5e+00|3.6e+09| 1.155228e+08  0.000000e+00| 0:0:00| chol  1↙
1
 1|0.946|0.943|5.4e-02|5.4e-01|4.1e+08| 1.012691e+08  4.526828e+06| 0:0:00| chol  1↙
1
 2|0.663|0.656|1.8e-02|1.9e-01|2.0e+08| 7.564526e+07  4.167607e+06| 0:0:00| chol  1↙
1
 3|0.646|0.645|6.5e-03|6.6e-02|1.1e+08| 5.639437e+07  3.051811e+06| 0:0:00| chol  1↙
1
 4|0.789|0.769|1.4e-03|1.5e-02|5.9e+07| 3.493098e+07  1.085360e+06| 0:0:00| chol  1↙
1
```

```
 5|1.000|0.921|5.5e-10|1.2e-03|1.6e+07| 1.110108e+07 -5.897409e+04| 0:0:00| chol  1↙
2
 6|0.981|0.957|2.3e-10|5.3e-05|1.1e+06| 7.893972e+05 -6.158147e+03| 0:0:00| chol  2↙
2
 7|0.820|0.984|3.4e-10|2.0e-06|3.8e+05| 3.257164e+05 -6.412947e+03| 0:0:00| chol  1↙
1
 8|1.000|0.996|6.7e-11|8.5e-07|2.6e+04| 2.011659e+04 -4.540994e+03| 0:0:00| chol  2↙
2
 9|0.448|1.000|1.6e-10|4.2e-07|1.9e+04| 1.580975e+04 -2.724188e+03| 0:0:00| chol  1↙
1
10|1.000|0.836|5.8e-11|2.5e-07|7.9e+03| 6.371596e+03 -1.429951e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.9e-10|1.1e-07|2.8e+03| 1.655224e+03 -1.130000e+03| 0:0:00| chol  1↙
1
12|1.000|0.965|3.4e-11|5.5e-08|8.8e+02|-2.544704e+01 -8.953002e+02| 0:0:00| chol  2↙
2
13|0.900|1.000|6.8e-11|2.6e-08|2.5e+02|-6.324711e+02 -8.785648e+02| 0:0:00| chol  2↙
2
14|1.000|0.991|1.9e-10|1.3e-08|8.2e+01|-7.785545e+02 -8.595298e+02| 0:0:00| chol  2↙
2
15|0.905|0.998|4.9e-11|6.6e-09|8.5e+00|-8.500050e+02 -8.580789e+02| 0:0:00| chol  2↙
2
16|1.000|0.690|2.0e-09|4.3e-09|4.0e+00|-8.538270e+02 -8.575658e+02| 0:0:00| chol  2↙
2
17|0.734|1.000|3.8e-09|1.7e-09|1.9e+00|-8.558307e+02 -8.576145e+02| 0:0:00| chol  2↙
2
18|1.000|0.949|1.3e-09|8.9e-10|6.6e-01|-8.569343e+02 -8.575472e+02| 0:0:00| chol  3↙
3
19|0.893|1.000|1.1e-10|4.4e-10|9.6e-02|-8.574916e+02 -8.575618e+02| 0:0:00| chol  3↙
3
20|0.972|0.956|3.1e-10|2.6e-11|4.1e-03|-8.575799e+02 -8.575825e+02| 0:0:00| chol  3↙
3
21|0.980|0.978|9.8e-12|7.2e-13|9.2e-05|-8.575833e+02 -8.575834e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.57583335e+02
 dual   objective value = -8.57583385e+02
 gap := trace(XZ)       = 9.15e-05
 relative gap           = 5.33e-08
 actual relative gap    = 2.91e-08
 rel. primal infeas     = 9.80e-12
 rel. dual   infeas     = 7.16e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.7e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.7e-11  0.0e+00  1.0e-12  0.0e+00  2.9e-08  5.3e-08
------------------------------------------------------------------

ans =

  857.5834
```

```
Epoch... 297
Epoch... 298

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.5e+00|4.0e+09| 1.310656e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.946|0.944|5.4e-02|5.3e-01|4.6e+08| 1.140898e+08  4.456274e+06| 0:0:00| chol  1↙
1
 2|0.671|0.663|1.8e-02|1.8e-01|2.3e+08| 8.461329e+07  4.088000e+06| 0:0:00| chol  1↙
1
 3|0.658|0.655|6.0e-03|6.2e-02|1.2e+08| 6.227973e+07  2.943570e+06| 0:0:00| chol  1↙
1
 4|0.816|0.781|1.1e-03|1.4e-02|6.3e+07| 3.727700e+07  9.591765e+05| 0:0:00| chol  2↙
2
 5|1.000|0.932|5.4e-10|9.2e-04|1.5e+07| 9.883891e+06 -6.326804e+04| 0:0:00| chol  2↙
2
 6|0.979|0.956|1.3e-09|4.1e-05|1.0e+06| 7.286128e+05 -6.235986e+03| 0:0:00| chol  2↙
2
 7|0.823|1.000|6.1e-10|1.7e-06|3.5e+05| 3.074135e+05 -6.421824e+03| 0:0:00| chol  2↙
1
 8|0.961|0.901|7.7e-11|9.3e-07|2.8e+04| 2.169282e+04 -4.395755e+03| 0:0:00| chol  1↙
2
 9|0.313|1.000|1.1e-10|4.2e-07|2.2e+04| 1.844793e+04 -3.220665e+03| 0:0:00| chol  2↙
2
10|1.000|0.850|2.7e-10|2.4e-07|1.0e+04| 8.415845e+03 -1.553082e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.7e-10|1.1e-07|3.3e+03| 2.133349e+03 -1.130234e+03| 0:0:00| chol  2↙
2
12|1.000|0.972|2.2e-10|5.4e-08|1.1e+03| 1.975417e+02 -8.803907e+02| 0:0:00| chol  2↙
2
13|0.867|1.000|4.5e-11|2.6e-08|3.4e+02|-5.200220e+02 -8.607701e+02| 0:0:00| chol  2↙
2
14|1.000|0.977|2.9e-10|1.3e-08|1.2e+02|-7.128794e+02 -8.323939e+02| 0:0:00| chol  2↙
2
15|0.918|1.000|2.0e-10|6.6e-09|1.1e+01|-8.197557e+02 -8.303698e+02| 0:0:00| chol  2↙
2
16|1.000|0.773|4.7e-10|4.1e-09|4.2e+00|-8.256965e+02 -8.297036e+02| 0:0:00| chol  2↙
3
17|1.000|0.805|2.5e-09|2.2e-09|1.7e+00|-8.280999e+02 -8.296373e+02| 0:0:00| chol  2↙
2
18|0.831|1.000|9.0e-10|8.7e-10|4.4e-01|-8.293027e+02 -8.296936e+02| 0:0:00| chol  3↙
3
19|1.000|0.970|4.9e-10|4.9e-10|1.4e-01|-8.295892e+02 -8.297027e+02| 0:0:00| chol  3↙
2
```

```
20|0.970|0.985|1.2e-09|1.5e-11|4.8e-03|-8.297219e+02 -8.297258e+02| 0:0:00| chol  4↙
5
21|0.981|0.990|2.1e-09|3.0e-13|9.5e-05|-8.297260e+02 -8.297261e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.29726041e+02
 dual   objective value = -8.29726113e+02
 gap := trace(XZ)       = 9.48e-05
 relative gap           = 5.71e-08
 actual relative gap    = 4.29e-08
 rel. primal infeas     = 2.15e-09
 rel. dual   infeas     = 3.02e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.6e+05, 1.3e+06, 3.6e+04
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.4e-09  0.0e+00  4.3e-13  0.0e+00  4.3e-08  5.7e-08
-------------------------------------------------------------------

ans =

  829.7261

Epoch... 299
Epoch... 300

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 60
*******************************************************************
   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|9.4e+00|4.1e+09| 1.331402e+08  0.000000e+00| 0:0:00| chol  2↙
2
 1|0.947|0.944|5.3e-02|5.2e-01|4.6e+08| 1.158221e+08  4.388057e+06| 0:0:00| chol  1↙
1
 2|0.673|0.665|1.7e-02|1.7e-01|2.3e+08| 8.562275e+07  4.020633e+06| 0:0:00| chol  1↙
1
 3|0.661|0.657|5.9e-03|6.0e-02|1.2e+08| 6.279328e+07  2.881277e+06| 0:0:00| chol  1↙
1
 4|0.823|0.784|1.0e-03|1.3e-02|6.3e+07| 3.722656e+07  9.151366e+05| 0:0:00| chol  1↙
1
 5|1.000|0.934|5.7e-10|8.5e-04|1.4e+07| 9.252581e+06 -5.945362e+04| 0:0:00| chol  2↙
2
 6|0.978|0.955|3.1e-10|3.9e-05|9.9e+05| 6.968694e+05 -5.968869e+03| 0:0:00| chol  2↙
2
 7|0.817|1.000|3.2e-10|1.7e-06|3.4e+05| 2.983840e+05 -6.298581e+03| 0:0:00| chol  1↙
1
```

```
 8|0.966|0.913|8.8e-11|9.2e-07|2.7e+04| 2.070882e+04 -4.285697e+03| 0:0:00| chol  2↙
2
 9|0.357|1.000|1.5e-10|4.2e-07|2.1e+04| 1.726653e+04 -2.825301e+03| 0:0:00| chol  1↙
2
10|1.000|0.896|3.5e-10|2.3e-07|9.4e+03| 7.739025e+03 -1.501544e+03| 0:0:00| chol  2↙
2
11|1.000|1.000|1.5e-10|1.1e-07|3.2e+03| 2.002443e+03 -1.133788e+03| 0:0:00| chol  2↙
2
12|1.000|0.974|8.0e-11|5.4e-08|1.0e+03| 1.449266e+02 -8.800849e+02| 0:0:00| chol  2↙
2
13|0.875|1.000|1.6e-10|2.6e-08|3.3e+02|-5.276003e+02 -8.584555e+02| 0:0:00| chol  2↙
2
14|1.000|0.993|7.7e-11|1.3e-08|1.2e+02|-7.165066e+02 -8.319759e+02| 0:0:00| chol  2↙
2
15|0.920|1.000|1.8e-10|6.6e-09|1.0e+01|-8.201377e+02 -8.301477e+02| 0:0:00| chol  2↙
2
16|0.998|0.777|2.2e-11|4.1e-09|3.9e+00|-8.258583e+02 -8.295252e+02| 0:0:00| chol  2↙
3
17|1.000|0.815|2.8e-10|2.1e-09|1.5e+00|-8.280996e+02 -8.294866e+02| 0:0:00| chol  3↙
2
18|0.838|1.000|9.9e-10|8.3e-10|3.6e-01|-8.292360e+02 -8.295464e+02| 0:0:00| chol  3↙
3
19|1.000|0.907|8.9e-10|4.6e-10|1.2e-01|-8.294623e+02 -8.295582e+02| 0:0:00| chol  3↙
3
20|0.980|0.990|4.7e-10|8.9e-12|2.7e-03|-8.295809e+02 -8.295831e+02| 0:0:00| chol  5↙
4
21|0.984|0.988|2.9e-09|1.8e-13|4.7e-05|-8.295833e+02 -8.295833e+02| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 21
 primal objective value = -8.29583309e+02
 dual   objective value = -8.29583345e+02
 gap := trace(XZ)       = 4.66e-05
 relative gap           = 2.81e-08
 actual relative gap    = 2.18e-08
 rel. primal infeas     = 2.85e-09
 rel. dual   infeas     = 1.77e-13
 norm(X), norm(y), norm(Z) = 1.7e+04, 5.0e+04, 3.5e+04
 norm(A), norm(b), norm(C) = 4.6e+05, 1.4e+06, 3.6e+04
 Total CPU time (secs)  = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.5e-09  0.0e+00  2.5e-13  0.0e+00  2.2e-08  2.8e-08
------------------------------------------------------------------------

ans =

  829.5833

The total representation error of the testing signals is: 5.0467
>>
```