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

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|3.5e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|2.2e-05|6.3e-01|4.3e+04| 2.228748e+04 -5.074709e+00| 0:0:00| chol  1↙
1
 2|1.000|1.000|1.5e-06|9.0e-02|4.8e+03| 4.199561e+03 -1.008481e+00| 0:0:00| chol  1↙
1
 3|0.996|0.997|8.2e-07|9.3e-03|6.7e+01| 6.554807e+01 -6.493981e-01| 0:0:00| chol  1↙
1
 4|0.876|0.871|1.6e-06|2.0e-03|8.5e+00| 7.847829e+00 -6.339939e-01| 0:0:00| chol  1↙
1
 5|0.244|0.880|1.2e-06|3.2e-04|8.0e+00| 7.415491e+00 -5.838006e-01| 0:0:00| chol  1↙
1
 6|0.367|1.000|7.7e-07|9.2e-06|7.3e+00| 6.719158e+00 -6.003373e-01| 0:0:00| chol  1↙
1
 7|1.000|1.000|3.6e-11|1.1e-06|3.9e+00| 3.385581e+00 -5.570154e-01| 0:0:00| chol  1↙
1
 8|0.793|1.000|2.1e-11|9.0e-08|1.8e+00| 1.311049e+00 -5.228480e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|8.7e-12|9.0e-09|1.1e+00| 6.178793e-01 -5.047875e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|8.6e-15|9.0e-10|4.3e-01|-5.540755e-02 -4.865053e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|8.0e-15|9.1e-11|2.3e-01|-2.392983e-01 -4.739046e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|2.2e-15|1.0e-11|9.1e-02|-3.767908e-01 -4.676026e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|2.4e-15|1.9e-12|3.9e-02|-4.239312e-01 -4.627086e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|1.8e-15|1.1e-12|1.4e-02|-4.469368e-01 -4.610110e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|6.0e-15|1.0e-12|5.6e-03|-4.542499e-01 -4.598849e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|1.8e-15|1.0e-12|2.0e-03|-4.575091e-01 -4.595219e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|1.2e-14|1.0e-12|8.3e-04|-4.585046e-01 -4.593355e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|9.1e-16|1.0e-12|2.7e-04|-4.590088e-01 -4.592796e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.3e-14|1.0e-12|9.8e-05|-4.591582e-01 -4.592563e-01| 0:0:00| chol  1↙
1
```

```
20|1.000|1.000|7.1e-15|1.0e-12|3.4e-05|-4.592148e-01 -4.592486e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|1.7e-14|1.0e-12|1.5e-05|-4.592309e-01 -4.592460e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|6.6e-15|1.0e-12|5.2e-06|-4.592398e-01 -4.592450e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|7.1e-15|1.0e-12|2.1e-06|-4.592425e-01 -4.592445e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|1.0e-14|1.0e-12|6.9e-07|-4.592437e-01 -4.592444e-01| 0:0:01| chol  1↙
1
25|1.000|1.000|1.1e-14|1.0e-12|2.7e-07|-4.592441e-01 -4.592443e-01| 0:0:01| chol  1↙
1
26|1.000|1.000|1.1e-14|1.0e-12|9.0e-08|-4.592442e-01 -4.592443e-01| 0:0:01|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 26
 primal objective value = -4.59244219e-01
 dual   objective value = -4.59244309e-01
 gap := trace(XZ)       = 9.02e-08
 relative gap           = 4.70e-08
 actual relative gap    = 4.70e-08
 rel. primal infeas     = 1.13e-14
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 7.9e-01, 1.6e+00, 1.9e+01
 norm(A), norm(b), norm(C) = 3.4e+02, 2.0e+00, 2.1e+01
 Total CPU time (secs)  = 0.51
 CPU time per iteration = 0.02
 termination code       =  0
 DIMACS errors: 1.1e-14  0.0e+00  8.2e-12  0.0e+00  4.7e-08  4.7e-08
-------------------------------------------------------------------

ans =

    0.4592


 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|3.0e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|2.1e-05|6.6e-01|4.4e+04| 2.228859e+04 -1.242003e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|9.1e-06|9.0e-02|5.0e+03| 4.437194e+03 -1.690247e+00| 0:0:00| chol  1↙
1
 3|0.995|0.993|9.7e-07|9.6e-03|8.0e+01| 7.729998e+01 -1.336044e+00| 0:0:00| chol  1↙
1
```

```
 4|1.000|0.884|1.5e-05|1.9e-03|4.5e+01| 4.366387e+01 -9.715644e-01| 0:0:00| chol  1↙
1
 5|0.284|1.000|1.1e-05|9.0e-05|3.9e+01| 3.825139e+01 -1.032182e+00| 0:0:00| chol  1↙
1
 6|1.000|1.000|1.3e-09|9.4e-06|1.8e+01| 1.703251e+01 -6.742764e-01| 0:0:00| chol  1↙
1
 7|0.716|1.000|7.5e-10|9.0e-07|1.1e+01| 1.079768e+01 -5.818389e-01| 0:0:00| chol  1↙
1
 8|1.000|1.000|5.5e-11|9.0e-08|5.5e+00| 5.055723e+00 -4.092345e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|2.1e-11|9.0e-09|2.7e+00| 2.370759e+00 -3.738169e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|2.0e-14|9.0e-10|1.1e+00| 8.189755e-01 -2.961852e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|2.0e-14|9.1e-11|4.1e-01| 1.376719e-01 -2.745746e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|4.8e-15|1.0e-11|1.7e-01|-8.935215e-02 -2.577460e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|1.5e-15|1.9e-12|5.5e-02|-1.967744e-01 -2.517936e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|2.2e-14|1.1e-12|2.4e-02|-2.253741e-01 -2.489518e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|1.0e-14|1.0e-12|8.9e-03|-2.391471e-01 -2.480200e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|1.7e-13|1.0e-12|3.7e-03|-2.436607e-01 -2.473767e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|5.0e-14|1.0e-12|1.6e-03|-2.456683e-01 -2.472373e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|2.2e-13|1.0e-12|7.6e-04|-2.463465e-01 -2.471085e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.6e-13|1.0e-12|2.8e-04|-2.467841e-01 -2.470608e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|1.1e-13|1.0e-12|1.0e-04|-2.469339e-01 -2.470358e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|1.1e-12|1.0e-12|3.8e-05|-2.469895e-01 -2.470274e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|1.4e-12|1.0e-12|1.6e-05|-2.470073e-01 -2.470236e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|2.9e-12|1.0e-12|5.7e-06|-2.470164e-01 -2.470221e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|5.5e-12|1.0e-12|2.2e-06|-2.470192e-01 -2.470214e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|5.2e-12|1.1e-12|7.7e-07|-2.470204e-01 -2.470212e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|4.1e-12|1.0e-12|2.9e-07|-2.470208e-01 -2.470211e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|5.9e-12|1.0e-12|9.9e-08|-2.470210e-01 -2.470211e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 27
 primal objective value = -2.47020952e-01
 dual   objective value = -2.47021052e-01
 gap := trace(XZ)       = 9.94e-08
 relative gap           = 6.66e-08
```

```
 actual relative gap    = 6.66e-08
 rel. primal infeas     = 5.91e-12
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 9.4e-01, 2.1e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.5e+02, 2.4e+00, 2.1e+01
 Total CPU time (secs)  = 0.25
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.0e-12  0.0e+00  8.2e-12  0.0e+00  6.7e-08  6.7e-08
------------------------------------------------------------------

ans =

    0.2470

Iteration   2   Total error is: 0.0018671

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|3.1e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|2.4e-05|6.7e-01|4.5e+04| 2.228877e+04 -1.810114e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|1.5e-05|9.0e-02|5.1e+03| 4.535951e+03 -2.357006e+00| 0:0:00| chol  1↙
1
 3|0.992|0.992|3.0e-06|9.6e-03|9.5e+01| 9.152755e+01 -2.032922e+00| 0:0:00| chol  1↙
1
 4|1.000|0.540|3.3e-05|4.9e-03|6.9e+01| 6.737919e+01 -1.452617e+00| 0:0:00| chol  1↙
1
 5|0.251|1.000|2.5e-05|9.1e-05|6.1e+01| 5.914354e+01 -2.131816e+00| 0:0:00| chol  1↙
1
 6|1.000|1.000|4.1e-09|1.0e-05|3.6e+01| 3.465917e+01 -1.024914e+00| 0:0:00| chol  1↙
1
 7|0.768|0.997|1.5e-09|9.3e-07|1.6e+01| 1.497685e+01 -6.191895e-01| 0:0:00| chol  1↙
1
 8|1.000|1.000|5.1e-10|9.0e-08|1.0e+01| 9.993062e+00 -4.858706e-01| 0:0:00| chol  1↙
1
 9|0.892|1.000|8.2e-11|9.1e-09|3.7e+00| 3.326792e+00 -3.452408e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|5.3e-13|9.2e-10|1.8e+00| 1.543039e+00 -2.753092e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|2.5e-14|9.1e-11|5.7e-01| 3.362150e-01 -2.333648e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|4.2e-14|1.0e-11|2.4e-01| 2.884978e-02 -2.135429e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|1.5e-14|1.9e-12|7.2e-02|-1.333602e-01 -2.055748e-01| 0:0:00| chol  1↙
```

```
1
14|1.000|1.000|6.8e-14|1.1e-12|3.3e-02|-1.698351e-01 -2.024197e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|3.8e-14|1.0e-12|1.2e-02|-1.893783e-01 -2.013876e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|5.3e-14|1.0e-12|5.0e-03|-1.956407e-01 -2.006178e-01| 0:0:00| chol  1↙
1
17|0.989|1.000|2.7e-14|1.0e-12|2.0e-03|-1.984101e-01 -2.004199e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|4.1e-14|1.0e-12|1.0e-03|-1.992675e-01 -2.002697e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|5.8e-14|1.0e-12|3.6e-04|-1.998593e-01 -2.002145e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|8.4e-14|1.0e-12|1.4e-04|-2.000477e-01 -2.001848e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|5.7e-14|1.0e-12|4.7e-05|-2.001257e-01 -2.001732e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|1.2e-12|1.0e-12|2.2e-05|-2.001469e-01 -2.001686e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|1.9e-12|1.0e-12|7.5e-06|-2.001592e-01 -2.001668e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|1.9e-12|1.0e-12|3.0e-06|-2.001628e-01 -2.001658e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|9.4e-12|1.0e-12|1.0e-06|-2.001645e-01 -2.001655e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|1.0e-12|1.5e-12|3.9e-07|-2.001650e-01 -2.001654e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|1.8e-12|1.0e-12|1.3e-07|-2.001652e-01 -2.001653e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 27
 primal objective value = -2.00165201e-01
 dual   objective value = -2.00165334e-01
 gap := trace(XZ)       = 1.33e-07
 relative gap           = 9.48e-08
 actual relative gap    = 9.48e-08
 rel. primal infeas     = 1.77e-12
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 9.9e-01, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.5e+02, 2.3e+00, 2.1e+01
 Total CPU time (secs)  = 0.24
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.1e-12  0.0e+00  8.2e-12  0.0e+00  9.5e-08  9.5e-08
-----------------------------------------------------------------

ans =

    0.2002

Iteration   3   Total error is: 0.0016065

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
```

```
 dim. of linear var  = 800
******************************************************************
   SDPT3: Infeasible path-following algorithms
******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.9e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|2.5e-05|6.8e-01|4.5e+04| 2.228868e+04 -2.033795e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|1.7e-05|9.0e-02|5.2e+03| 4.610780e+03 -2.844799e+00| 0:0:00| chol  1↙
1
 3|0.992|0.996|4.0e-06|9.3e-03|1.0e+02| 9.625211e+01 -2.540972e+00| 0:0:00| chol  1↙
1
 4|0.955|0.412|3.6e-05|5.8e-03|7.9e+01| 7.692644e+01 -1.823056e+00| 0:0:00| chol  1↙
1
 5|0.184|0.872|3.0e-05|8.3e-04|7.5e+01| 7.109745e+01 -4.024006e+00| 0:0:00| chol  1↙
1
 6|0.948|1.000|1.5e-06|1.1e-05|6.0e+01| 5.896339e+01 -1.081142e+00| 0:0:00| chol  1↙
1
 7|0.959|1.000|6.2e-08|1.2e-06|3.4e+01| 3.287591e+01 -1.177926e+00| 0:0:00| chol  1↙
1
 8|0.846|0.921|9.6e-09|1.9e-07|9.7e+00| 9.154441e+00 -5.425027e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|1.0e-10|1.1e-08|6.2e+00| 5.778528e+00 -3.929970e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|1.6e-13|9.2e-10|2.1e+00| 1.828662e+00 -2.988235e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|1.1e-14|9.1e-11|9.5e-01| 7.211357e-01 -2.312826e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|4.2e-15|1.0e-11|3.1e-01| 9.915997e-02 -2.065353e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|7.8e-15|1.9e-12|1.2e-01|-7.125191e-02 -1.942996e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|2.7e-14|1.1e-12|4.2e-02|-1.485530e-01 -1.901942e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|6.4e-14|1.0e-12|1.9e-02|-1.694333e-01 -1.883348e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|9.9e-15|1.0e-12|6.2e-03|-1.813573e-01 -1.875429e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|9.7e-14|1.0e-12|2.9e-03|-1.842468e-01 -1.871163e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|8.4e-14|1.0e-12|1.2e-03|-1.858547e-01 -1.870201e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|2.8e-14|1.0e-12|5.4e-04|-1.863823e-01 -1.869224e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|6.3e-15|1.0e-12|1.8e-04|-1.867085e-01 -1.868914e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|1.8e-14|1.0e-12|7.1e-05|-1.868011e-01 -1.868723e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|2.7e-14|1.0e-12|2.7e-05|-1.868403e-01 -1.868676e-01| 0:0:00| chol  1↙
1
```

```
23|1.000|1.000|6.1e-14|1.0e-12|1.1e-05|-1.868529e-01 -1.868644e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|2.5e-14|1.0e-12|4.0e-06|-1.868594e-01 -1.868634e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|9.0e-14|1.0e-12|1.6e-06|-1.868613e-01 -1.868629e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|5.0e-14|1.0e-12|5.3e-07|-1.868622e-01 -1.868627e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|5.3e-14|1.0e-12|2.1e-07|-1.868624e-01 -1.868627e-01| 0:0:00| chol  1↙
1
28|1.000|1.000|2.8e-14|1.0e-12|6.9e-08|-1.868626e-01 -1.868626e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 28
 primal objective value = -1.86862566e-01
 dual   objective value = -1.86862635e-01
 gap := trace(XZ)       = 6.92e-08
 relative gap           = 5.04e-08
 actual relative gap    = 5.04e-08
 rel. primal infeas     = 2.78e-14
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.0e+00, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.6e+02, 2.5e+00, 2.1e+01
 Total CPU time (secs)  = 0.23
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.4e-14  0.0e+00  8.2e-12  0.0e+00  5.0e-08  5.0e-08
-----------------------------------------------------------------

ans =

    0.1869

Iteration   4   Total error is: 0.0015403

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*****************************************************************
   SDPT3: Infeasible path-following algorithms
*****************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-----------------------------------------------------------------
 0|0.000|0.000|2.9e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|2.8e-05|6.9e-01|4.5e+04| 2.228848e+04 -2.181050e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|2.1e-05|9.0e-02|5.3e+03| 4.707404e+03 -3.423897e+00| 0:0:00| chol  1↙
1
 3|0.991|1.000|4.5e-06|9.0e-03|1.1e+02| 1.054354e+02 -3.141635e+00| 0:0:00| chol  1↙
1
 4|1.000|0.384|4.0e-05|5.9e-03|8.7e+01| 8.387486e+01 -2.228400e+00| 0:0:00| chol  1↙
```

```
1
 5|0.231|1.000|3.1e-05|9.1e-05|7.7e+01| 7.258959e+01 -4.739679e+00| 0:0:00| chol  1↙
1
 6|1.000|0.936|2.6e-08|1.6e-05|5.9e+01| 5.811165e+01 -1.241369e+00| 0:0:00| chol  1↙
1
 7|0.843|1.000|4.6e-09|9.1e-07|1.7e+01| 1.596104e+01 -1.005361e+00| 0:0:00| chol  1↙
1
 8|1.000|1.000|2.2e-10|9.1e-08|8.5e+00| 8.047466e+00 -4.727032e-01| 0:0:00| chol  1↙
1
 9|0.883|1.000|5.4e-11|9.0e-09|2.4e+00| 2.159558e+00 -2.858452e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|2.9e-13|9.1e-10|1.3e+00| 1.048302e+00 -2.331113e-01| 0:0:00| chol  1↙
1
11|0.977|1.000|2.5e-14|9.1e-11|3.4e-01| 1.470426e-01 -1.962406e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|4.8e-14|1.0e-11|1.6e-01|-2.345387e-02 -1.841064e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|1.7e-14|1.9e-12|4.8e-02|-1.306916e-01 -1.784259e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|3.0e-15|1.1e-12|2.3e-02|-1.536056e-01 -1.762248e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|2.7e-14|1.0e-12|7.4e-03|-1.679750e-01 -1.753605e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|1.8e-14|1.0e-12|3.2e-03|-1.717149e-01 -1.748652e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|6.9e-14|1.0e-12|1.4e-03|-1.733363e-01 -1.747842e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|7.2e-14|1.0e-12|7.0e-04|-1.739540e-01 -1.746569e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.2e-13|1.0e-12|2.5e-04|-1.743675e-01 -1.746189e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|9.0e-14|1.0e-12|9.5e-05|-1.745014e-01 -1.745959e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|3.4e-14|1.0e-12|3.5e-05|-1.745536e-01 -1.745885e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|2.2e-13|1.0e-12|1.5e-05|-1.745699e-01 -1.745849e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|8.3e-14|1.0e-12|5.3e-06|-1.745783e-01 -1.745836e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|4.4e-14|1.0e-12|2.1e-06|-1.745809e-01 -1.745829e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|5.7e-14|1.0e-12|7.0e-07|-1.745820e-01 -1.745827e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|8.4e-14|1.0e-12|2.7e-07|-1.745823e-01 -1.745826e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|5.9e-14|1.0e-12|9.1e-08|-1.745825e-01 -1.745826e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 27
 primal objective value = -1.74582498e-01
 dual   objective value = -1.74582590e-01
 gap := trace(XZ)       = 9.14e-08
 relative gap           = 6.77e-08
 actual relative gap    = 6.77e-08
```

```
 rel. primal infeas     = 5.94e-14
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.0e+00, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.6e+02, 2.5e+00, 2.1e+01
 Total CPU time (secs)  = 0.21
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.1e-14  0.0e+00  8.2e-12  0.0e+00  6.8e-08  6.8e-08
------------------------------------------------------------------

ans =

    0.1746

Iteration   5   Total error is: 0.0014677

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.8e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|3.3e-05|7.0e-01|4.6e+04| 2.228805e+04 -2.212701e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|2.5e-05|9.0e-02|5.5e+03| 4.846585e+03 -4.220976e+00| 0:0:00| chol  1↙
1
 3|0.993|1.000|5.0e-06|9.0e-03|1.1e+02| 1.091449e+02 -3.952758e+00| 0:0:00| chol  1↙
1
 4|1.000|0.362|4.5e-05|6.1e-03|9.0e+01| 8.648712e+01 -2.757621e+00| 0:0:00| chol  1↙
1
 5|0.380|1.000|2.8e-05|9.1e-05|7.4e+01| 7.053306e+01 -3.348301e+00| 0:0:00| chol  1↙
1
 6|1.000|0.866|6.3e-09|2.2e-05|4.1e+01| 3.952513e+01 -1.377763e+00| 0:0:00| chol  1↙
1
 7|0.806|1.000|2.3e-09|9.0e-07|2.3e+01| 2.178499e+01 -1.027583e+00| 0:0:00| chol  1↙
1
 8|1.000|1.000|1.6e-10|9.0e-08|1.1e+01| 1.067186e+01 -5.283916e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|5.1e-11|9.0e-09|5.0e+00| 4.598629e+00 -4.078758e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|5.6e-14|9.1e-10|2.0e+00| 1.711487e+00 -2.494751e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|2.9e-14|9.1e-11|6.9e-01| 4.827520e-01 -2.022942e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|1.8e-14|1.0e-11|2.6e-01| 8.695492e-02 -1.753556e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|1.9e-14|1.9e-12|8.2e-02|-8.447878e-02 -1.666851e-01| 0:0:00| chol  1↙
1
```

```
14|0.987|1.000|9.3e-14|1.1e-12|3.7e-02|-1.260952e-01 -1.629552e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|1.3e-14|1.0e-12|1.3e-02|-1.486976e-01 -1.617274e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|6.0e-14|1.0e-12|5.2e-03|-1.557106e-01 -1.609189e-01| 0:0:00| chol  1↙
1
17|0.977|1.000|3.7e-14|1.0e-12|2.1e-03|-1.585666e-01 -1.606962e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|8.8e-15|1.0e-12|1.1e-03|-1.594904e-01 -1.605542e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|4.8e-14|1.0e-12|4.1e-04|-1.600907e-01 -1.605032e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|5.0e-14|1.0e-12|1.6e-04|-1.603118e-01 -1.604683e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|3.6e-13|1.0e-12|5.6e-05|-1.603994e-01 -1.604559e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|3.5e-13|1.0e-12|2.5e-05|-1.604253e-01 -1.604503e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|1.3e-12|1.0e-12|8.9e-06|-1.604394e-01 -1.604483e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|9.6e-12|1.0e-12|3.5e-06|-1.604436e-01 -1.604471e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|4.8e-12|1.5e-12|1.2e-06|-1.604456e-01 -1.604468e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|9.3e-12|1.0e-12|4.7e-07|-1.604462e-01 -1.604466e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|4.1e-12|1.5e-12|1.6e-07|-1.604464e-01 -1.604466e-01| 0:0:00| chol  1↙
1
28|1.000|1.000|2.2e-11|1.0e-12|6.1e-08|-1.604465e-01 -1.604466e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 28
 primal objective value = -1.60446507e-01
 dual   objective value = -1.60446568e-01
 gap := trace(XZ)       = 6.11e-08
 relative gap           = 4.63e-08
 actual relative gap    = 4.63e-08
 rel. primal infeas     = 2.25e-11
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.0e+00, 2.4e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.6e+02, 2.6e+00, 2.1e+01
 Total CPU time (secs)  = 0.23
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.6e-11  0.0e+00  8.2e-12  0.0e+00  4.6e-08  4.6e-08
-------------------------------------------------------------------

ans =

    0.1604

Iteration   6   Total error is: 0.0013747

 num. of constraints = 65
```

```
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.7e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|3.8e-05|7.2e-01|4.6e+04| 2.228781e+04 -2.495484e+01| 0:0:00| chol  1↙
1
 2|1.000|1.000|2.7e-05|9.0e-02|5.7e+03| 4.998009e+03 -5.292160e+00| 0:0:00| chol  1↙
1
 3|0.993|1.000|6.1e-06|9.0e-03|1.4e+02| 1.340155e+02 -5.074393e+00| 0:0:00| chol  1↙
1
 4|1.000|0.423|4.4e-05|5.6e-03|1.0e+02| 9.796796e+01 -3.401910e+00| 0:0:00| chol  1↙
1
 5|0.861|1.000|6.1e-06|9.2e-05|7.5e+01| 7.282579e+01 -2.328789e+00| 0:0:00| chol  1↙
1
 6|1.000|1.000|3.6e-09|1.0e-05|4.7e+01| 4.533000e+01 -1.433577e+00| 0:0:00| chol  1↙
1
 7|0.998|1.000|9.0e-10|9.0e-07|1.6e+01| 1.556052e+01 -8.233962e-01| 0:0:00| chol  1↙
1
 8|1.000|1.000|1.9e-10|9.0e-08|9.0e+00| 8.538034e+00 -4.884552e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|4.1e-11|9.0e-09|3.3e+00| 2.962690e+00 -3.190251e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|2.2e-14|9.1e-10|1.3e+00| 1.095200e+00 -2.110849e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|3.7e-14|9.1e-11|4.0e-01| 2.304822e-01 -1.725727e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|1.3e-13|1.0e-11|1.6e-01| 5.232430e-03 -1.567888e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|4.6e-15|1.9e-12|5.2e-02|-9.938852e-02 -1.510736e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|2.5e-14|1.1e-12|2.2e-02|-1.263614e-01 -1.486925e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|9.7e-14|1.0e-12|6.7e-03|-1.411391e-01 -1.477964e-01| 0:0:00| chol  1↙
1
16|1.000|0.938|1.1e-13|1.1e-12|3.1e-03|-1.442515e-01 -1.473816e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|6.4e-14|1.0e-12|1.6e-03|-1.456992e-01 -1.473079e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|1.6e-13|1.0e-12|7.1e-04|-1.464561e-01 -1.471680e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|7.7e-13|1.0e-12|2.6e-04|-1.468760e-01 -1.471390e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|4.8e-13|1.0e-12|1.1e-04|-1.470042e-01 -1.471116e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|6.9e-14|1.0e-12|3.7e-05|-1.470670e-01 -1.471038e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|7.8e-13|1.0e-12|1.7e-05|-1.470825e-01 -1.470997e-01| 0:0:00| chol  1↙
```

```
1
23|1.000|1.000|1.4e-12|1.0e-12|6.0e-06|-1.470923e-01 -1.470983e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|2.7e-12|1.0e-12|2.4e-06|-1.470952e-01 -1.470975e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|3.1e-13|1.0e-12|8.0e-07|-1.470965e-01 -1.470973e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|4.2e-13|1.0e-12|3.1e-07|-1.470969e-01 -1.470972e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|2.3e-12|1.0e-12|1.0e-07|-1.470971e-01 -1.470972e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 27
 primal objective value = -1.47097056e-01
 dual   objective value = -1.47097161e-01
 gap := trace(XZ)       = 1.05e-07
 relative gap           = 8.09e-08
 actual relative gap    = 8.09e-08
 rel. primal infeas     = 2.35e-12
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.1e+00, 2.4e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.6e+02, 2.7e+00, 2.1e+01
 Total CPU time (secs)  = 0.22
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.7e-12  0.0e+00  8.2e-12  0.0e+00  8.1e-08  8.1e-08
-------------------------------------------------------------------

ans =

    0.1471

Iteration   7   Total error is: 0.0012924

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.5e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.997|4.2e-05|7.3e-01|4.7e+04| 2.228756e+04 -2.821791e+01| 0:0:00| chol  1↙
1
 2|1.000|0.994|2.9e-05|9.4e-02|5.9e+03| 5.157998e+03 -6.731040e+00| 0:0:00| chol  1↙
1
 3|0.997|1.000|7.5e-06|9.0e-03|1.7e+02| 1.566606e+02 -6.463746e+00| 0:0:00| chol  1↙
1
 4|0.830|0.445|3.3e-05|5.4e-03|1.2e+02| 1.162751e+02 -4.180018e+00| 0:0:00| chol  1↙
1
```

```
 5|1.000|0.523|2.9e-07|2.6e-03|9.4e+01| 9.143366e+01 -2.530903e+00| 0:0:00| chol  1↙
1
 6|0.477|1.000|1.3e-07|9.1e-06|6.7e+01| 6.240294e+01 -4.176595e+00| 0:0:00| chol  1↙
1
 7|1.000|0.997|2.2e-09|9.5e-07|3.9e+01| 3.772574e+01 -1.103565e+00| 0:0:00| chol  1↙
1
 8|0.866|1.000|4.9e-10|9.0e-08|1.4e+01| 1.294300e+01 -8.079857e-01| 0:0:00| chol  1↙
1
 9|1.000|1.000|5.3e-11|9.1e-09|6.7e+00| 6.310929e+00 -3.992228e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|1.5e-13|9.1e-10|2.2e+00| 1.916508e+00 -2.627579e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|2.7e-14|9.1e-11|9.2e-01| 7.359622e-01 -1.815341e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|6.2e-15|1.0e-11|2.6e-01| 1.029456e-01 -1.527026e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|9.4e-14|1.9e-12|1.1e-01|-3.068388e-02 -1.423380e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|2.0e-14|1.1e-12|3.4e-02|-1.044631e-01 -1.382542e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|6.1e-13|1.0e-12|1.5e-02|-1.214379e-01 -1.367660e-01| 0:0:00| chol  1↙
1
16|0.980|1.000|5.9e-14|1.0e-12|5.0e-03|-1.311245e-01 -1.360765e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|4.5e-13|1.0e-12|2.6e-03|-1.331715e-01 -1.357981e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|4.2e-12|1.0e-12|1.1e-03|-1.346248e-01 -1.357166e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.5e-12|1.0e-12|4.8e-04|-1.351451e-01 -1.356241e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|2.9e-12|1.0e-12|1.7e-04|-1.354336e-01 -1.355998e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|1.5e-13|1.0e-12|6.7e-05|-1.355148e-01 -1.355813e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|3.5e-13|1.0e-12|2.5e-05|-1.355520e-01 -1.355772e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|7.6e-13|1.0e-12|1.1e-05|-1.355632e-01 -1.355740e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|3.4e-13|1.0e-12|3.7e-06|-1.355694e-01 -1.355731e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|1.5e-12|1.0e-12|1.5e-06|-1.355711e-01 -1.355726e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|8.3e-12|1.0e-12|5.0e-07|-1.355720e-01 -1.355725e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|3.3e-12|1.5e-12|1.9e-07|-1.355722e-01 -1.355724e-01| 0:0:00| chol  1↙
1
28|1.000|1.000|3.7e-11|1.0e-12|6.5e-08|-1.355723e-01 -1.355724e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 28
 primal objective value = -1.35572300e-01
 dual   objective value = -1.35572365e-01
 gap := trace(XZ)       = 6.48e-08
 relative gap           = 5.10e-08
```

```
 actual relative gap    = 5.10e-08
 rel. primal infeas     = 3.67e-11
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.2e+00, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.7e+02, 2.9e+00, 2.1e+01
 Total CPU time (secs)  = 0.22
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.1e-11  0.0e+00  8.2e-12  0.0e+00  5.1e-08  5.1e-08
------------------------------------------------------------------

ans =

    0.1356

Iteration   8   Total error is: 0.0012316

 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.4e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.996|4.5e-05|7.5e-01|4.7e+04| 2.228728e+04 -3.165211e+01| 0:0:00| chol  1↙
1
 2|1.000|0.988|3.1e-05|9.8e-02|6.1e+03| 5.334790e+03 -8.458784e+00| 0:0:00| chol  1↙
1
 3|1.000|1.000|8.9e-06|9.0e-03|2.6e+02| 2.503851e+02 -8.156825e+00| 0:0:00| chol  1↙
1
 4|0.576|0.532|1.7e-05|4.7e-03|1.9e+02| 1.836181e+02 -5.279069e+00| 0:0:00| chol  1↙
1
 5|1.000|0.873|2.7e-07|6.8e-04|1.3e+02| 1.307431e+02 -3.075171e+00| 0:0:00| chol  1↙
1
 6|1.000|1.000|1.3e-08|9.1e-06|8.0e+01| 7.718052e+01 -2.823522e+00| 0:0:00| chol  1↙
1
 7|1.000|0.974|1.5e-09|1.1e-06|3.4e+01| 3.304368e+01 -1.205063e+00| 0:0:00| chol  1↙
1
 8|1.000|1.000|4.1e-10|9.0e-08|1.8e+01| 1.651040e+01 -1.093148e+00| 0:0:00| chol  1↙
1
 9|1.000|1.000|6.1e-11|9.1e-09|8.3e+00| 7.856413e+00 -4.585917e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|9.6e-14|9.1e-10|3.0e+00| 2.747281e+00 -2.915153e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|9.0e-14|9.1e-11|1.1e+00| 9.516074e-01 -1.824181e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|1.6e-14|1.0e-11|3.4e-01| 1.916949e-01 -1.472458e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|9.9e-14|1.9e-12|1.4e-01| 4.641801e-03 -1.337056e-01| 0:0:00| chol  1↙
```

```
1
14|1.000|1.000|1.2e-14|1.1e-12|4.1e-02|-8.747173e-02 -1.286645e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|2.2e-13|1.0e-12|1.9e-02|-1.083349e-01 -1.268798e-01| 0:0:00| chol  1↙
1
16|1.000|1.000|2.7e-14|1.0e-12|6.6e-03|-1.195835e-01 -1.261708e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|8.5e-13|1.0e-12|3.1e-03|-1.226424e-01 -1.257617e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|4.5e-12|1.0e-12|1.3e-03|-1.243582e-01 -1.256717e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.8e-12|1.0e-12|6.2e-04|-1.249372e-01 -1.255599e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|1.8e-11|1.0e-12|2.2e-04|-1.253032e-01 -1.255279e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|6.7e-13|1.5e-12|8.5e-05|-1.254209e-01 -1.255061e-01| 0:0:00| chol  1↙
1
22|1.000|1.000|1.9e-12|1.0e-12|3.2e-05|-1.254678e-01 -1.254998e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|1.4e-12|1.0e-12|1.4e-05|-1.254826e-01 -1.254962e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|3.5e-12|1.0e-12|4.8e-06|-1.254903e-01 -1.254950e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|3.1e-12|1.0e-12|1.9e-06|-1.254925e-01 -1.254944e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|3.2e-12|1.0e-12|6.3e-07|-1.254936e-01 -1.254942e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|4.6e-12|1.0e-12|2.5e-07|-1.254939e-01 -1.254941e-01| 0:0:00| chol  1↙
1
28|1.000|1.000|3.2e-12|1.0e-12|8.2e-08|-1.254940e-01 -1.254941e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 28
 primal objective value = -1.25494026e-01
 dual   objective value = -1.25494109e-01
 gap := trace(XZ)       = 8.25e-08
 relative gap           = 6.59e-08
 actual relative gap    = 6.59e-08
 rel. primal infeas     = 3.23e-12
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.2e+00, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.8e+02, 3.1e+00, 2.1e+01
 Total CPU time (secs)  = 0.22
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.5e-12  0.0e+00  8.2e-12  0.0e+00  6.6e-08  6.6e-08
------------------------------------------------------------------

ans =

    0.1255

Iteration   9   Total error is: 0.0011737
```

```
 num. of constraints = 65
 dim. of socp   var  = 66,   num. of socp blk  =  1
 dim. of linear var  = 800
*******************************************************************
   SDPT3: Infeasible path-following algorithms
*******************************************************************
 version  predcorr  gam  expon  scale_data
   HKM      1      0.000   1        0
it pstep dstep pinfeas dinfeas  gap      prim-obj      dual-obj    cputime
-------------------------------------------------------------------
 0|0.000|0.000|2.3e+00|1.3e+02|4.3e+06| 2.263091e+04  0.000000e+00| 0:0:00| chol  1↙
1
 1|1.000|0.996|4.7e-05|7.6e-01|4.8e+04| 2.228698e+04 -3.519230e+01| 0:0:00| chol  1↙
1
 2|1.000|0.981|3.3e-05|1.0e-01|6.4e+03| 5.532203e+03 -1.046045e+01| 0:0:00| chol  1↙
1
 3|1.000|1.000|1.0e-05|9.0e-03|4.6e+02| 4.462117e+02 -1.015415e+01| 0:0:00| chol  1↙
1
 4|0.615|0.605|1.1e-05|4.1e-03|2.7e+02| 2.604298e+02 -6.828216e+00| 0:0:00| chol  1↙
1
 5|0.906|1.000|1.1e-06|9.2e-05|2.0e+02| 1.923565e+02 -3.974731e+00| 0:0:00| chol  1↙
1
 6|1.000|1.000|1.6e-08|9.2e-06|1.1e+02| 1.116413e+02 -3.016320e+00| 0:0:00| chol  1↙
1
 7|1.000|1.000|2.3e-09|9.0e-07|4.8e+01| 4.664128e+01 -1.721058e+00| 0:0:00| chol  1↙
1
 8|1.000|1.000|5.9e-10|9.0e-08|2.3e+01| 2.181315e+01 -1.037943e+00| 0:0:00| chol  1↙
1
 9|1.000|1.000|8.8e-11|9.1e-09|8.9e+00| 8.369008e+00 -5.175883e-01| 0:0:00| chol  1↙
1
10|1.000|1.000|3.7e-12|9.2e-10|3.4e+00| 3.112170e+00 -2.916918e-01| 0:0:00| chol  1↙
1
11|1.000|1.000|2.1e-13|9.1e-11|1.1e+00| 9.495206e-01 -1.761611e-01| 0:0:00| chol  1↙
1
12|1.000|1.000|1.2e-14|1.0e-11|3.8e-01| 2.397548e-01 -1.391586e-01| 0:0:00| chol  1↙
1
13|1.000|1.000|5.6e-14|1.9e-12|1.3e-01| 1.866004e-03 -1.244718e-01| 0:0:00| chol  1↙
1
14|1.000|1.000|4.5e-14|1.1e-12|4.7e-02|-7.260120e-02 -1.196782e-01| 0:0:00| chol  1↙
1
15|1.000|1.000|1.4e-13|1.0e-12|1.8e-02|-1.001171e-01 -1.176528e-01| 0:0:00| chol  1↙
1
16|0.986|1.000|9.0e-13|1.0e-12|5.5e-03|-1.113773e-01 -1.168533e-01| 0:0:00| chol  1↙
1
17|1.000|1.000|9.4e-13|1.0e-12|3.0e-03|-1.135445e-01 -1.165351e-01| 0:0:00| chol  1↙
1
18|1.000|1.000|1.3e-11|1.0e-12|1.3e-03|-1.151733e-01 -1.164524e-01| 0:0:00| chol  1↙
1
19|1.000|1.000|1.0e-12|1.5e-12|5.7e-04|-1.157731e-01 -1.163457e-01| 0:0:00| chol  1↙
1
20|1.000|1.000|6.1e-12|1.0e-12|2.0e-04|-1.161151e-01 -1.163177e-01| 0:0:00| chol  1↙
1
21|1.000|1.000|6.6e-12|1.2e-12|8.0e-05|-1.162160e-01 -1.162961e-01| 0:0:00| chol  1↙
1
```

```
22|1.000|1.000|1.5e-11|1.3e-12|3.0e-05|-1.162612e-01 -1.162908e-01| 0:0:00| chol  1↙
1
23|1.000|1.000|8.8e-13|2.0e-12|1.3e-05|-1.162743e-01 -1.162872e-01| 0:0:00| chol  1↙
1
24|1.000|1.000|1.7e-12|1.0e-12|4.5e-06|-1.162816e-01 -1.162861e-01| 0:0:00| chol  1↙
1
25|1.000|1.000|2.7e-12|1.0e-12|1.8e-06|-1.162838e-01 -1.162855e-01| 0:0:00| chol  1↙
1
26|1.000|1.000|4.8e-12|1.0e-12|6.0e-07|-1.162848e-01 -1.162854e-01| 0:0:00| chol  1↙
1
27|1.000|1.000|2.3e-12|1.0e-12|2.3e-07|-1.162850e-01 -1.162853e-01| 0:0:00| chol  1↙
1
28|1.000|1.000|6.9e-13|1.0e-12|7.8e-08|-1.162852e-01 -1.162852e-01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------------
 number of iterations   = 28
 primal objective value = -1.16285164e-01
 dual   objective value = -1.16285242e-01
 gap := trace(XZ)       = 7.81e-08
 relative gap           = 6.34e-08
 actual relative gap    = 6.34e-08
 rel. primal infeas     = 6.91e-13
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 1.2e+00, 2.3e+00, 2.0e+01
 norm(A), norm(b), norm(C) = 3.8e+02, 3.3e+00, 2.1e+01
 Total CPU time (secs)  = 0.23
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.5e-13  0.0e+00  8.2e-12  0.0e+00  6.3e-08  6.3e-08
------------------------------------------------------------------------

ans =

    0.1163

Iteration   10   Total error is: 0.0011129
The total representation error of the testing signals is: 0.17687
>>
```