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

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|2.7e+05| 5.924956e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.984|0.987|1.7e-02|1.1e-01|1.5e+04| 6.173781e+03 -8.752245e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.3e-08|2.0e-02|1.8e+03| 1.247902e+03 -1.379325e+01| 0:0:00| chol  1  1
 3|0.996|1.000|1.3e-08|6.1e-03|8.4e+01| 4.709167e+01 -1.391827e+01| 0:0:00| chol  1  1
 4|1.000|1.000|6.0e-08|6.1e-04|2.5e+01| 9.817245e+00 -1.429354e+01| 0:0:00| chol  1  1
 5|0.810|0.808|1.2e-08|1.7e-04|5.7e+00|-8.446394e+00 -1.413819e+01| 0:0:00| chol  1  1
 6|1.000|1.000|2.7e-08|6.1e-06|3.2e+00|-1.080202e+01 -1.402246e+01| 0:0:00| chol  1  1
 7|0.828|0.641|7.4e-09|2.6e-06|7.4e-01|-1.321835e+01 -1.395671e+01| 0:0:00| chol  1  1
 8|1.000|0.977|8.5e-10|1.2e-07|3.7e-01|-1.358163e+01 -1.395285e+01| 0:0:00| chol  1  1
 9|0.914|0.967|6.1e-10|1.0e-08|3.9e-02|-1.390421e+01 -1.394283e+01| 0:0:00| chol  1  1
10|1.000|1.000|2.5e-12|7.3e-10|6.3e-03|-1.393624e+01 -1.394250e+01| 0:0:00| chol  1  1
11|0.983|0.984|6.6e-12|7.3e-11|1.1e-04|-1.394233e+01 -1.394244e+01| 0:0:00| chol  1  1
12|1.000|1.000|7.5e-12|1.3e-12|1.5e-06|-1.394244e+01 -1.394244e+01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 12
 primal objective value = -1.39424422e+01
 dual   objective value = -1.39424437e+01
 gap := trace(XZ)       = 1.50e-06
 relative gap           = 5.19e-08
 actual relative gap    = 5.19e-08
 rel. primal infeas     = 7.50e-12
 rel. dual   infeas     = 1.31e-12
 norm(X), norm(y), norm(Z) = 2.5e+01, 7.2e+01, 4.8e+01
 norm(A), norm(b), norm(C) = 3.0e+01, 1.0e+02, 5.8e+01
 Total CPU time (secs)  = 0.08
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.6e-12  0.0e+00  1.8e-12  0.0e+00  5.2e-08  5.2e-08
-------------------------------------------------------------------

ans =

   13.9424


 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.6e+05| 8.315037e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.976|0.985|2.5e-02|1.1e-01|2.1e+04| 8.495491e+03  2.326143e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.1e-08|2.0e-02|3.0e+03| 2.111313e+03 -5.248631e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.4e-08|6.1e-03|1.4e+02| 9.579494e+01 -3.844123e+00| 0:0:00| chol  1  1
 4|1.000|1.000|6.4e-08|6.1e-04|2.8e+01| 2.267427e+01 -4.285695e+00| 0:0:00| chol  1  1
 5|0.873|0.885|7.5e-09|1.2e-04|3.6e+00|-6.511270e-01 -4.233748e+00| 0:0:00| chol  1  1
 6|1.000|0.805|4.2e-08|2.9e-05|2.0e+00|-2.239641e+00 -4.227972e+00| 0:0:00| chol  1  1
 7|0.803|1.000|8.1e-09|6.2e-07|5.0e-01|-3.724779e+00 -4.223204e+00| 0:0:00| chol  1  1
 8|1.000|0.831|7.8e-09|1.6e-07|2.3e-01|-3.976895e+00 -4.207933e+00| 0:0:00| chol  1  1
 9|0.490|1.000|4.4e-09|7.7e-09|1.6e-01|-4.039725e+00 -4.198744e+00| 0:0:00| chol  1  1
10|0.569|0.688|1.9e-09|3.7e-09|1.0e-01|-4.098710e+00 -4.201795e+00| 0:0:00| chol  1  1
11|1.000|1.000|4.8e-13|4.4e-10|3.8e-02|-4.159743e+00 -4.197884e+00| 0:0:00| chol  1  1
12|0.953|0.965|4.5e-14|2.2e-11|3.2e-03|-4.193751e+00 -4.196991e+00| 0:0:00| chol  1  1
13|0.953|0.982|7.3e-13|2.0e-12|1.7e-04|-4.196728e+00 -4.196898e+00| 0:0:00| chol  1  2
14|1.000|1.000|4.5e-11|1.0e-12|3.2e-05|-4.196865e+00 -4.196896e+00| 0:0:00| chol  1  1
15|1.000|1.000|9.4e-11|1.5e-12|1.1e-06|-4.196895e+00 -4.196896e+00| 0:0:00| chol  2  2
16|1.000|1.000|4.4e-12|2.3e-12|3.9e-08|-4.196896e+00 -4.196896e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 16
 primal objective value = -4.19689600e+00
 dual   objective value = -4.19689604e+00
 gap := trace(XZ)       = 3.89e-08
 relative gap           = 4.14e-09
 actual relative gap    = 4.50e-09
 rel. primal infeas     = 4.38e-12
 rel. dual   infeas     = 2.25e-12
 norm(X), norm(y), norm(Z) = 2.6e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.1e+01, 1.4e+02, 5.8e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.4e-12  0.0e+00  3.1e-12  0.0e+00  4.5e-09  4.1e-09
-------------------------------------------------------------------

ans =

    4.1969

Iteration   2   Total error is: 0.03319

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.7e+05| 8.381020e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.975|0.985|2.5e-02|1.2e-01|2.1e+04| 8.553903e+03  2.733417e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.3e-08|2.0e-02|3.1e+03| 2.208738e+03 -5.405656e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.4e-08|6.1e-03|1.4e+02| 9.918403e+01 -3.833506e+00| 0:0:00| chol  1  1
 4|1.000|1.000|3.8e-08|6.1e-04|1.9e+01| 1.437951e+01 -4.261221e+00| 0:0:00| chol  1  1
 5|0.827|0.839|6.1e-09|1.5e-04|3.7e+00|-5.471812e-01 -4.226715e+00| 0:0:00| chol  1  1
 6|1.000|1.000|2.2e-08|6.1e-06|2.0e+00|-2.217534e+00 -4.225924e+00| 0:0:00| chol  1  1
 7|0.880|1.000|4.0e-09|6.1e-07|2.5e-01|-3.966164e+00 -4.217542e+00| 0:0:00| chol  1  1
 8|1.000|0.744|1.0e-08|2.0e-07|1.5e-01|-4.051676e+00 -4.197803e+00| 0:0:00| chol  1  1
 9|0.914|0.846|2.0e-09|3.8e-08|8.2e-02|-4.111809e+00 -4.194047e+00| 0:0:00| chol  1  1
10|1.000|1.000|3.5e-13|1.0e-09|4.0e-02|-4.154312e+00 -4.194483e+00| 0:0:00| chol  1  1
11|0.934|0.937|2.5e-13|1.2e-10|3.8e-03|-4.189258e+00 -4.193064e+00| 0:0:00| chol  1  1
12|0.985|0.985|1.0e-12|8.8e-12|5.8e-05|-4.192878e+00 -4.192936e+00| 0:0:00| chol  1  1
13|0.999|0.991|2.7e-11|1.1e-12|8.0e-07|-4.192933e+00 -4.192934e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 13
 primal objective value = -4.19293327e+00
 dual   objective value = -4.19293412e+00
 gap := trace(XZ)       = 7.96e-07
 relative gap           = 8.48e-08
 actual relative gap    = 9.05e-08
 rel. primal infeas     = 2.68e-11
 rel. dual   infeas     = 1.08e-12
 norm(X), norm(y), norm(Z) = 2.6e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.1e+01, 1.4e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.7e-11  0.0e+00  1.5e-12  0.0e+00  9.1e-08  8.5e-08
-------------------------------------------------------------------

ans =

    4.1929

Iteration   3   Total error is: 0.033173

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.7e+05| 8.446626e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.975|0.984|2.6e-02|1.2e-01|2.1e+04| 8.611925e+03  3.142482e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.4e-08|2.0e-02|3.2e+03| 2.309808e+03 -5.574921e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.4e-08|6.1e-03|1.4e+02| 1.027319e+02 -3.826690e+00| 0:0:00| chol  1  1
 4|1.000|1.000|1.8e-08|6.1e-04|1.4e+01| 8.838210e+00 -4.244056e+00| 0:0:00| chol  1  1
 5|0.815|0.824|4.0e-09|1.6e-04|3.8e+00|-4.580439e-01 -4.221880e+00| 0:0:00| chol  1  1
 6|1.000|1.000|6.3e-09|6.1e-06|2.0e+00|-2.216835e+00 -4.225077e+00| 0:0:00| chol  1  1
```

```
 7|0.878|0.961|2.2e-09|8.3e-07|2.5e-01|-3.966859e+00 -4.214235e+00| 0:0:00| chol  1  1
 8|0.410|0.910|5.1e-09|1.3e-07|1.9e-01|-3.999119e+00 -4.192522e+00| 0:0:00| chol  1  1
 9|0.712|0.702|1.5e-09|4.4e-08|8.9e-02|-4.102917e+00 -4.191916e+00| 0:0:00| chol  1  1
10|1.000|1.000|2.6e-14|9.2e-10|2.6e-02|-4.164587e+00 -4.190305e+00| 0:0:00| chol  1  1
11|0.895|1.000|1.6e-12|6.2e-11|3.9e-03|-4.185753e+00 -4.189626e+00| 0:0:00| chol  1  1
12|1.000|1.000|5.1e-12|7.1e-12|3.0e-04|-4.189294e+00 -4.189589e+00| 0:0:00| chol  1  1
13|0.989|0.989|9.5e-12|1.1e-12|3.4e-06|-4.189583e+00 -4.189587e+00| 0:0:00| chol  2  2
14|0.999|0.998|1.3e-12|1.5e-12|3.8e-08|-4.189587e+00 -4.189587e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.18958673e+00
 dual   objective value = -4.18958677e+00
 gap := trace(XZ)       = 3.82e-08
 relative gap           = 4.07e-09
 actual relative gap    = 4.16e-09
 rel. primal infeas     = 1.27e-12
 rel. dual   infeas     = 1.54e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.1e+01, 1.4e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.3e-12  0.0e+00  2.2e-12  0.0e+00  4.2e-09  4.1e-09
-----------------------------------------------------------------

ans =

    4.1896

Iteration   4   Total error is: 0.033147

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*****************************************************************
   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|3.4e+00|3.7e+05| 8.512358e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.974|0.984|2.6e-02|1.2e-01|2.2e+04| 8.670055e+03  3.550949e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.6e-08|2.0e-02|3.4e+03| 2.414159e+03 -5.754086e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.5e-08|6.1e-03|1.5e+02| 1.063814e+02 -3.822487e+00| 0:0:00| chol  1  1
 4|1.000|1.000|1.1e-08|6.1e-04|1.1e+01| 5.966515e+00 -4.233556e+00| 0:0:00| chol  1  1
 5|0.895|0.881|5.9e-09|1.3e-04|4.0e+00|-2.103149e-01 -4.219176e+00| 0:0:00| chol  1  1
 6|1.000|1.000|6.2e-09|6.1e-06|2.0e+00|-2.236452e+00 -4.222216e+00| 0:0:00| chol  1  1
 7|0.878|0.964|2.1e-09|8.1e-07|2.4e-01|-3.966326e+00 -4.210567e+00| 0:0:00| chol  1  1
 8|0.403|0.906|5.0e-09|1.3e-07|1.9e-01|-3.997824e+00 -4.189255e+00| 0:0:00| chol  1  1
 9|0.686|0.693|1.6e-09|4.6e-08|9.2e-02|-4.096356e+00 -4.188782e+00| 0:0:00| chol  1  1
10|1.000|1.000|1.0e-13|9.3e-10|2.8e-02|-4.159364e+00 -4.187045e+00| 0:0:00| chol  1  1
11|0.895|1.000|4.1e-13|6.2e-11|4.1e-03|-4.182193e+00 -4.186314e+00| 0:0:00| chol  1  1
12|1.000|1.000|2.5e-11|7.1e-12|3.3e-04|-4.185944e+00 -4.186274e+00| 0:0:00| chol  1  1
```

```
13|0.988|0.988|1.5e-11|1.6e-12|3.9e-06|-4.186267e+00 -4.186271e+00| 0:0:00| chol  1  1
14|0.999|0.998|2.3e-11|2.3e-12|4.4e-08|-4.186271e+00 -4.186271e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.18627121e+00
 dual   objective value = -4.18627126e+00
 gap := trace(XZ)       = 4.37e-08
 relative gap           = 4.66e-09
 actual relative gap    = 4.98e-09
 rel. primal infeas     = 2.28e-11
 rel. dual   infeas     = 2.25e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.2e+01, 1.4e+02, 5.8e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.3e-11  0.0e+00  3.1e-12  0.0e+00  5.0e-09  4.7e-09
------------------------------------------------------------------

ans =

    4.1863

Iteration   5   Total error is: 0.033121

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.7e+05| 8.578237e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.974|0.983|2.7e-02|1.2e-01|2.2e+04| 8.728316e+03  3.958879e+00| 0:0:00| chol  1  1
 2|1.000|1.000|4.8e-08|2.0e-02|3.5e+03| 2.521689e+03 -5.942544e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.5e-08|6.1e-03|1.5e+02| 1.101281e+02 -3.820949e+00| 0:0:00| chol  1  1
 4|1.000|1.000|2.1e-08|6.1e-04|9.5e+00| 4.856232e+00 -4.227463e+00| 0:0:00| chol  1  1
 5|0.949|0.901|8.7e-09|1.2e-04|4.3e+00| 1.580132e-02 -4.216502e+00| 0:0:00| chol  1  1
 6|1.000|1.000|2.2e-08|6.1e-06|2.0e+00|-2.191190e+00 -4.218077e+00| 0:0:00| chol  1  1
 7|0.878|0.989|2.8e-09|6.8e-07|2.5e-01|-3.957045e+00 -4.207111e+00| 0:0:00| chol  1  1
 8|0.373|0.940|4.5e-09|9.9e-08|2.0e-01|-3.985130e+00 -4.186141e+00| 0:0:00| chol  1  1
 9|0.768|0.758|1.3e-09|2.9e-08|9.1e-02|-4.094884e+00 -4.185975e+00| 0:0:00| chol  1  1
10|1.000|0.996|1.0e-12|9.9e-10|1.3e-02|-4.169664e+00 -4.183151e+00| 0:0:00| chol  1  1
11|0.959|0.978|2.3e-12|8.2e-11|6.3e-04|-4.182356e+00 -4.182991e+00| 0:0:00| chol  1  1
12|0.970|0.986|5.7e-11|2.2e-12|1.9e-05|-4.182966e+00 -4.182985e+00| 0:0:00| chol  2  2
13|1.000|1.000|4.6e-11|1.5e-12|1.2e-06|-4.182984e+00 -4.182985e+00| 0:0:00| chol  2  2
14|1.000|1.000|1.5e-11|2.2e-12|1.5e-08|-4.182985e+00 -4.182985e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.18298509e+00
```

```
 dual   objective value = -4.18298502e+00
 gap := trace(XZ)       = 1.48e-08
 relative gap           = 1.58e-09
 actual relative gap    = -6.83e-09
 rel. primal infeas     = 1.49e-11
 rel. dual   infeas     = 2.25e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.2e+01, 1.4e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.5e-11  0.0e+00  3.1e-12  0.0e+00  -6.8e-09  1.6e-09
------------------------------------------------------------------

ans =

    4.1830

Iteration   6   Total error is: 0.033095

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.8e+05| 8.644286e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.973|0.983|2.7e-02|1.2e-01|2.2e+04| 8.786726e+03  4.366406e+00| 0:0:00| chol  1  1
 2|1.000|1.000|5.0e-08|2.0e-02|3.6e+03| 2.632301e+03 -6.139699e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.6e-08|6.1e-03|1.6e+02| 1.139681e+02 -3.822131e+00| 0:0:00| chol  1  1
 4|1.000|1.000|3.3e-08|6.1e-04|9.4e+00| 4.713914e+00 -4.223607e+00| 0:0:00| chol  1  1
 5|0.998|0.933|1.5e-08|9.8e-05|4.5e+00| 2.734136e-01 -4.214960e+00| 0:0:00| chol  1  1
 6|1.000|1.000|4.3e-08|6.1e-06|2.1e+00|-2.087423e+00 -4.213993e+00| 0:0:00| chol  1  1
 7|0.853|1.000|5.1e-09|6.2e-07|3.8e-01|-3.828006e+00 -4.205353e+00| 0:0:00| chol  1  1
 8|1.000|0.772|8.4e-09|1.9e-07|1.7e-01|-4.014651e+00 -4.187571e+00| 0:0:00| chol  1  1
 9|1.000|0.764|2.0e-09|5.1e-08|8.0e-02|-4.100836e+00 -4.181022e+00| 0:0:00| chol  1  1
10|0.714|0.866|5.8e-10|7.8e-09|3.7e-02|-4.144761e+00 -4.181606e+00| 0:0:00| chol  1  1
11|0.976|0.955|1.4e-11|5.3e-10|1.7e-03|-4.178091e+00 -4.179782e+00| 0:0:00| chol  1  1
12|0.967|0.980|9.8e-12|1.9e-11|6.5e-05|-4.179662e+00 -4.179727e+00| 0:0:00| chol  1  1
13|1.000|1.000|4.3e-11|2.0e-12|6.4e-06|-4.179719e+00 -4.179725e+00| 0:0:00| chol  2  2
14|1.000|1.000|2.5e-12|2.9e-12|2.2e-07|-4.179725e+00 -4.179725e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.17972517e+00
 dual   objective value = -4.17972541e+00
 gap := trace(XZ)       = 2.24e-07
 relative gap           = 2.40e-08
 actual relative gap    = 2.54e-08
 rel. primal infeas     = 2.49e-12
 rel. dual   infeas     = 2.93e-12
```

```
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.2e+01, 1.5e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.5e-12  0.0e+00  4.1e-12  0.0e+00  2.5e-08  2.4e-08
------------------------------------------------------------------

ans =

    4.1797

Iteration   7   Total error is: 0.033068

 num. of constraints = 33
 dim. of socp   var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 174
*******************************************************************
   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|3.4e+00|3.8e+05| 8.710630e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.973|0.982|2.8e-02|1.2e-01|2.2e+04| 8.845394e+03  4.774786e+00| 0:0:00| chol  1  1
 2|1.000|1.000|5.2e-08|2.0e-02|3.8e+03| 2.746145e+03 -6.345472e+00| 0:0:00| chol  1  1
 3|0.992|0.999|1.7e-08|6.1e-03|1.6e+02| 1.179081e+02 -3.826163e+00| 0:0:00| chol  1  1
 4|1.000|1.000|4.4e-08|6.1e-04|9.9e+00| 5.204102e+00 -4.221203e+00| 0:0:00| chol  1  1
 5|1.000|1.000|1.9e-08|6.1e-05|5.1e+00| 8.740776e-01 -4.214919e+00| 0:0:00| chol  1  1
 6|1.000|1.000|3.9e-08|6.1e-06|2.0e+00|-2.258753e+00 -4.213965e+00| 0:0:00| chol  1  1
 7|0.912|1.000|2.7e-09|6.2e-07|2.3e-01|-3.975144e+00 -4.200624e+00| 0:0:00| chol  1  1
 8|0.868|0.748|8.9e-09|2.0e-07|1.2e-01|-4.055610e+00 -4.178871e+00| 0:0:00| chol  1  2
 9|0.517|0.513|4.3e-09|1.0e-07|9.5e-02|-4.085177e+00 -4.179934e+00| 0:0:00| chol  1  1
10|0.473|1.000|2.2e-09|1.5e-09|6.8e-02|-4.110089e+00 -4.178014e+00| 0:0:00| chol  1  1
11|1.000|1.000|8.7e-13|5.1e-10|2.9e-02|-4.148471e+00 -4.177384e+00| 0:0:00| chol  1  1
12|0.954|0.954|1.2e-13|3.0e-11|1.8e-03|-4.174741e+00 -4.176548e+00| 0:0:00| chol  1  1
13|0.982|0.985|1.4e-12|2.1e-12|3.2e-05|-4.176455e+00 -4.176488e+00| 0:0:00| chol  2  2
14|1.000|0.994|1.1e-11|1.0e-12|1.3e-06|-4.176485e+00 -4.176487e+00| 0:0:00| chol  2  2
15|1.000|1.000|5.9e-11|1.5e-12|4.2e-08|-4.176487e+00 -4.176487e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 15
 primal objective value = -4.17648667e+00
 dual   objective value = -4.17648661e+00
 gap := trace(XZ)       = 4.17e-08
 relative gap           = 4.46e-09
 actual relative gap    = -7.15e-09
 rel. primal infeas     = 5.90e-11
 rel. dual   infeas     = 1.50e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.3e+01
 norm(A), norm(b), norm(C) = 3.2e+01, 1.5e+02, 5.8e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
```

```
 DIMACS errors: 5.9e-11  0.0e+00  2.1e-12  0.0e+00  -7.2e-09  4.5e-09
------------------------------------------------------------------------

ans =

    4.1765

Iteration   8   Total error is: 0.033041
The total representation error of the testing signals is: 0.026364
>>
```