```
>> demo_Polynomial_Dictionary_Learning_Uber
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|3.2e+05| 7.891604e+03  0.000000e+00| 0:0:00| chol  1  1
 1|0.969|0.972|3.2e-02|1.6e-01|2.2e+04| 7.877646e+03  8.448593e-01| 0:0:00| chol  1  1
 2|1.000|1.000|1.1e-07|2.0e-02|5.3e+03| 3.950313e+03 -2.147091e+01| 0:0:00| chol  1  1
 3|0.994|0.993|3.3e-08|6.2e-03|2.0e+02| 1.314456e+02 -1.674565e+01| 0:0:00| chol  1  1
 4|1.000|1.000|2.2e-07|6.1e-04|9.7e+01| 7.819411e+01 -1.655998e+01| 0:0:00| chol  1  1
 5|0.869|0.864|3.7e-08|1.4e-04|1.4e+01|-2.744027e+00 -1.639756e+01| 0:0:00| chol  1  1
 6|1.000|1.000|3.1e-08|6.1e-06|8.0e+00|-8.232582e+00 -1.618431e+01| 0:0:00| chol  1  1
 7|0.864|0.865|6.1e-09|1.4e-06|1.3e+00|-1.463143e+01 -1.594599e+01| 0:0:00| chol  1  1
 8|0.506|0.707|7.5e-09|4.4e-07|1.0e+00|-1.487374e+01 -1.588979e+01| 0:0:00| chol  1  1
 9|0.682|0.965|3.7e-09|2.3e-08|7.6e-01|-1.511360e+01 -1.586944e+01| 0:0:00| chol  1  1
10|0.192|0.322|3.0e-09|1.6e-08|7.1e-01|-1.514142e+01 -1.585266e+01| 0:0:00| chol  1  1
11|0.717|1.000|8.4e-10|6.5e-10|5.0e-01|-1.534067e+01 -1.584539e+01| 0:0:00| chol  1  1
12|1.000|1.000|1.1e-14|1.7e-10|2.4e-01|-1.558856e+01 -1.582813e+01| 0:0:00| chol  1  1
13|1.000|1.000|3.8e-14|1.6e-12|9.6e-02|-1.571858e+01 -1.581468e+01| 0:0:00| chol  1  1
14|1.000|1.000|7.7e-13|1.1e-12|2.7e-02|-1.578332e+01 -1.580995e+01| 0:0:00| chol  1  1
15|1.000|1.000|8.4e-12|1.0e-12|1.0e-02|-1.579822e+01 -1.580868e+01| 0:0:00| chol  1  1
16|0.969|1.000|7.6e-13|1.5e-12|2.3e-03|-1.580603e+01 -1.580828e+01| 0:0:00| chol  2  2
17|1.000|1.000|4.9e-13|1.0e-12|8.9e-04|-1.580734e+01 -1.580822e+01| 0:0:00| chol  2  2
18|0.958|0.973|5.2e-13|1.0e-12|6.3e-05|-1.580814e+01 -1.580820e+01| 0:0:00| chol  2  2
19|0.992|1.000|2.1e-12|1.0e-12|5.0e-06|-1.580820e+01 -1.580820e+01| 0:0:00| chol  2  2
20|1.000|1.000|1.5e-11|1.0e-12|3.4e-07|-1.580820e+01 -1.580820e+01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -1.58082016e+01
 dual   objective value = -1.58082020e+01
 gap := trace(XZ)       = 3.42e-07
 relative gap           = 1.05e-08
 actual relative gap    = 1.05e-08
 rel. primal infeas     = 1.45e-11
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 3.0e+01, 7.7e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.4e+01, 1.3e+02, 5.8e+01
 Total CPU time (secs)  = 0.09
 CPU time per iteration = 0.00
 termination code       =  0
 DIMACS errors: 1.5e-11  0.0e+00  1.4e-12  0.0e+00  1.0e-08  1.0e-08
-------------------------------------------------------------------

ans =
```

```
   15.8082


 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|4.4e+05| 1.084901e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.962|0.971|3.9e-02|1.6e-01|3.1e+04| 1.069925e+04  1.299833e+01| 0:0:00| chol  1  1
 2|1.000|1.000|9.4e-08|2.0e-02|7.7e+03| 5.784467e+03 -1.167649e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.3e-08|6.1e-03|2.9e+02| 2.138167e+02 -4.759391e+00| 0:0:00| chol  1  1
 4|0.833|1.000|1.3e-07|6.1e-04|1.5e+02| 1.369017e+02 -4.752867e+00| 0:0:00| chol  1  1
 5|0.962|0.874|1.3e-08|1.3e-04|1.2e+01| 8.138704e+00 -4.224192e+00| 0:0:00| chol  1  1
 6|1.000|1.000|4.3e-09|6.1e-06|6.6e+00| 2.410341e+00 -4.181005e+00| 0:0:00| chol  1  1
 7|0.935|0.958|2.0e-09|8.4e-07|7.3e-01|-3.409261e+00 -4.139107e+00| 0:0:00| chol  1  1
 8|0.867|1.000|5.7e-09|6.2e-08|1.8e-01|-3.939846e+00 -4.117529e+00| 0:0:00| chol  1  1
 9|0.656|0.657|3.3e-09|2.6e-08|1.1e-01|-3.996151e+00 -4.107647e+00| 0:0:00| chol  1  1
10|0.666|0.787|1.1e-09|6.6e-09|7.6e-02|-4.034668e+00 -4.110567e+00| 0:0:00| chol  1  1
11|1.000|0.996|2.2e-13|3.1e-10|1.8e-02|-4.088725e+00 -4.106501e+00| 0:0:00| chol  1  1
12|0.959|0.978|7.0e-11|1.4e-11|7.8e-04|-4.105454e+00 -4.106229e+00| 0:0:00| chol  1  1
13|0.968|0.985|2.4e-11|1.7e-12|2.5e-05|-4.106196e+00 -4.106221e+00| 0:0:00| chol  2  2
14|1.000|1.000|2.7e-11|2.3e-12|2.0e-06|-4.106219e+00 -4.106221e+00| 0:0:00| chol  2  2
15|1.000|1.000|2.2e-12|3.4e-12|2.7e-08|-4.106221e+00 -4.106221e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 15
 primal objective value = -4.10622086e+00
 dual   objective value = -4.10622090e+00
 gap := trace(XZ)       = 2.66e-08
 relative gap           = 2.89e-09
 actual relative gap    = 3.82e-09
 rel. primal infeas     = 2.18e-12
 rel. dual   infeas     = 3.37e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.5e+01, 1.7e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.2e-12  0.0e+00  4.7e-12  0.0e+00  3.8e-09  2.9e-09
-------------------------------------------------------------------

ans =

    4.1062

Iteration   2   Total error is: 0.032393

 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|4.4e+05| 1.093006e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.961|0.971|3.9e-02|1.6e-01|3.1e+04| 1.077072e+04  1.343884e+01| 0:0:00| chol  1  1
 2|1.000|1.000|9.6e-08|2.0e-02|7.9e+03| 5.952075e+03 -1.194480e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.4e-08|6.1e-03|3.0e+02| 2.190524e+02 -4.851869e+00| 0:0:00| chol  1  1
 4|0.807|1.000|1.3e-07|6.1e-04|1.5e+02| 1.439471e+02 -4.791963e+00| 0:0:00| chol  1  1
 5|0.974|0.872|1.2e-08|1.3e-04|1.3e+01| 9.170879e+00 -4.228785e+00| 0:0:00| chol  1  1
 6|1.000|1.000|5.0e-09|6.1e-06|6.5e+00| 2.351973e+00 -4.181722e+00| 0:0:00| chol  1  1
 7|0.977|0.943|1.9e-09|9.3e-07|6.1e-01|-3.524957e+00 -4.135459e+00| 0:0:00| chol  1  1
 8|0.855|1.000|5.2e-09|6.2e-08|1.7e-01|-3.936808e+00 -4.110698e+00| 0:0:00| chol  1  1
 9|0.743|0.619|2.6e-09|2.8e-08|9.1e-02|-4.012735e+00 -4.103426e+00| 0:0:00| chol  1  1
10|0.925|1.000|1.9e-10|1.1e-09|5.1e-02|-4.053577e+00 -4.104776e+00| 0:0:00| chol  1  1
11|0.981|0.948|3.9e-12|1.6e-10|1.9e-03|-4.100446e+00 -4.102395e+00| 0:0:00| chol  1  1
12|0.987|0.987|7.5e-12|9.0e-12|2.4e-05|-4.102290e+00 -4.102315e+00| 0:0:00| chol  1  2
13|1.000|0.992|2.0e-11|1.6e-12|9.2e-07|-4.102313e+00 -4.102314e+00| 0:0:00| chol  2  2
14|1.000|1.000|4.1e-11|2.3e-12|6.4e-08|-4.102313e+00 -4.102314e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.10231344e+00
 dual   objective value = -4.10231372e+00
 gap := trace(XZ)       = 6.43e-08
 relative gap           = 6.98e-09
 actual relative gap    = 3.06e-08
 rel. primal infeas     = 4.13e-11
 rel. dual   infeas     = 2.25e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.5e+01, 1.7e+02, 5.8e+01
 Total CPU time (secs)  = 0.08
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 4.1e-11  0.0e+00  3.1e-12  0.0e+00  3.1e-08  7.0e-09
-------------------------------------------------------------------

ans =

    4.1023

Iteration   3   Total error is: 0.032339

 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|4.5e+05| 1.101233e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.961|0.970|4.0e-02|1.6e-01|3.2e+04| 1.084334e+04  1.387277e+01| 0:0:00| chol  1  1
 2|1.000|1.000|9.7e-08|2.0e-02|8.1e+03| 6.119792e+03 -1.220685e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.6e-08|6.1e-03|3.0e+02| 2.242042e+02 -4.947512e+00| 0:0:00| chol  1  1
 4|0.783|1.000|1.3e-07|6.1e-04|1.6e+02| 1.508344e+02 -4.833009e+00| 0:0:00| chol  1  1
 5|0.990|0.874|1.0e-08|1.3e-04|1.5e+01| 1.034339e+01 -4.233798e+00| 0:0:00| chol  1  1
 6|1.000|1.000|5.5e-09|6.1e-06|6.5e+00| 2.307724e+00 -4.184061e+00| 0:0:00| chol  1  1
 7|1.000|0.942|1.8e-09|9.3e-07|7.9e-01|-3.346461e+00 -4.132684e+00| 0:0:00| chol  1  1
 8|0.829|1.000|3.2e-09|6.2e-08|2.0e-01|-3.912402e+00 -4.111907e+00| 0:0:00| chol  1  1
 9|0.901|0.664|2.4e-09|2.5e-08|9.9e-02|-4.001076e+00 -4.100526e+00| 0:0:00| chol  1  1
10|0.703|0.827|7.3e-10|5.4e-09|6.5e-02|-4.037417e+00 -4.102685e+00| 0:0:00| chol  1  1
11|1.000|0.958|3.0e-13|4.3e-10|8.5e-03|-4.090705e+00 -4.099188e+00| 0:0:00| chol  1  1
12|0.973|0.983|4.1e-11|1.4e-11|2.3e-04|-4.098782e+00 -4.099011e+00| 0:0:00| chol  1  1
13|0.981|0.987|7.2e-11|1.7e-12|4.4e-06|-4.099004e+00 -4.099008e+00| 0:0:00| chol  2  2
14|1.000|1.000|1.2e-11|2.3e-12|1.9e-07|-4.099008e+00 -4.099008e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.09900763e+00
 dual   objective value = -4.09900790e+00
 gap := trace(XZ)       = 1.88e-07
 relative gap           = 2.04e-08
 actual relative gap    = 3.01e-08
 rel. primal infeas     = 1.24e-11
 rel. dual   infeas     = 2.25e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.6e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.5e+01, 1.7e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.2e-11  0.0e+00  3.1e-12  0.0e+00  3.0e-08  2.0e-08
-------------------------------------------------------------------

ans =

    4.0990

Iteration   4   Total error is: 0.032305

 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|4.5e+05| 1.109550e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.960|0.969|4.0e-02|1.7e-01|3.2e+04| 1.091676e+04  1.430928e+01| 0:0:00| chol  1  1
 2|1.000|1.000|9.9e-08|2.0e-02|8.4e+03| 6.289208e+03 -1.246683e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.7e-08|6.1e-03|3.1e+02| 2.293883e+02 -5.048485e+00| 0:0:00| chol  1  1
```

```
 4|0.761|1.000|1.3e-07|6.1e-04|1.7e+02| 1.576803e+02 -4.877238e+00| 0:0:00| chol  1  1
 5|1.000|0.880|9.4e-09|1.3e-04|1.7e+01| 1.279520e+01 -4.239417e+00| 0:0:00| chol  1  1
 6|1.000|1.000|5.3e-09|6.1e-06|6.8e+00| 2.653381e+00 -4.190406e+00| 0:0:00| chol  1  1
 7|1.000|0.974|1.7e-09|7.6e-07|1.5e+00|-2.599545e+00 -4.130437e+00| 0:0:00| chol  1  1
 8|0.834|1.000|1.4e-09|6.2e-08|2.7e-01|-3.843725e+00 -4.117030e+00| 0:0:00| chol  1  1
 9|1.000|0.788|3.1e-09|1.8e-08|1.8e-01|-3.922862e+00 -4.099231e+00| 0:0:00| chol  1  1
10|0.748|0.775|7.8e-10|5.0e-09|6.3e-02|-4.035430e+00 -4.098674e+00| 0:0:00| chol  1  1
11|0.958|0.942|3.3e-11|5.0e-10|3.0e-03|-4.092708e+00 -4.095747e+00| 0:0:00| chol  1  1
12|0.982|0.981|5.3e-11|2.2e-11|6.9e-05|-4.095609e+00 -4.095678e+00| 0:0:00| chol  1  1
13|1.000|1.000|2.1e-12|9.9e-12|5.5e-06|-4.095671e+00 -4.095676e+00| 0:0:00| chol  1  1
14|1.000|1.000|1.2e-11|1.0e-12|1.9e-07|-4.095676e+00 -4.095676e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
------------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.09567592e+00
 dual   objective value = -4.09567611e+00
 gap := trace(XZ)       = 1.86e-07
 relative gap           = 2.02e-08
 actual relative gap    = 2.07e-08
 rel. primal infeas     = 1.21e-11
 rel. dual   infeas     = 1.00e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.7e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.6e+01, 1.7e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 1.2e-11  0.0e+00  1.4e-12  0.0e+00  2.1e-08  2.0e-08
------------------------------------------------------------------

ans =

    4.0957

Iteration   5   Total error is: 0.03227

 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|4.5e+05| 1.117958e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.959|0.969|4.1e-02|1.7e-01|3.2e+04| 1.099098e+04  1.474860e+01| 0:0:00| chol  1  1
 2|1.000|1.000|1.0e-07|2.0e-02|8.6e+03| 6.460343e+03 -1.272460e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.8e-08|6.1e-03|3.2e+02| 2.346066e+02 -5.155016e+00| 0:0:00| chol  1  1
 4|0.739|1.000|1.3e-07|6.1e-04|1.7e+02| 1.644992e+02 -4.924990e+00| 0:0:00| chol  1  1
 5|1.000|0.889|9.7e-09|1.2e-04|2.2e+01| 1.740380e+01 -4.245703e+00| 0:0:00| chol  1  1
 6|0.978|1.000|4.8e-09|6.1e-06|8.0e+00| 3.822067e+00 -4.201840e+00| 0:0:00| chol  1  1
 7|1.000|0.996|1.7e-09|6.3e-07|2.4e+00|-1.739661e+00 -4.128695e+00| 0:0:00| chol  1  1
 8|0.863|0.996|8.7e-10|6.4e-08|3.4e-01|-3.782726e+00 -4.117924e+00| 0:0:00| chol  1  1
 9|1.000|0.889|3.3e-09|1.3e-08|2.2e-01|-3.879425e+00 -4.096752e+00| 0:0:00| chol  1  1
```

```
10|0.732|0.782|8.8e-10|3.5e-09|8.2e-02|-4.012651e+00 -4.094400e+00| 0:0:00| chol  1  1
11|0.993|0.957|5.9e-12|3.9e-10|3.6e-03|-4.088770e+00 -4.092386e+00| 0:0:00| chol  1  1
12|0.992|0.984|1.9e-11|1.3e-11|1.2e-04|-4.092197e+00 -4.092318e+00| 0:0:00| chol  1  1
13|1.000|1.000|7.9e-12|1.8e-12|1.3e-05|-4.092303e+00 -4.092316e+00| 0:0:00| chol  1  1
14|1.000|1.000|3.0e-11|1.6e-12|7.5e-07|-4.092315e+00 -4.092316e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.09231543e+00
 dual   objective value = -4.09231618e+00
 gap := trace(XZ)       = 7.51e-07
 relative gap           = 8.18e-08
 actual relative gap    = 8.20e-08
 rel. primal infeas     = 2.98e-11
 rel. dual   infeas     = 1.58e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.7e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.6e+01, 1.7e+02, 5.8e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.0e-11  0.0e+00  2.2e-12  0.0e+00  8.2e-08  8.2e-08
-----------------------------------------------------------------

ans =

    4.0923

Iteration   6   Total error is: 0.032235

 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|4.5e+05| 1.126461e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.959|0.968|4.2e-02|1.7e-01|3.3e+04| 1.106605e+04  1.519083e+01| 0:0:00| chol  1  1
 2|1.000|1.000|1.0e-07|2.0e-02|8.8e+03| 6.633195e+03 -1.297994e+01| 0:0:00| chol  1  1
 3|0.993|0.999|4.9e-08|6.1e-03|3.2e+02| 2.398594e+02 -5.267298e+00| 0:0:00| chol  1  1
 4|0.719|1.000|1.3e-07|6.1e-04|1.8e+02| 1.713024e+02 -4.976614e+00| 0:0:00| chol  1  1
 5|1.000|0.901|9.8e-09|1.2e-04|2.7e+01| 2.262881e+01 -4.252720e+00| 0:0:00| chol  1  1
 6|0.967|1.000|4.2e-09|6.1e-06|9.2e+00| 4.983919e+00 -4.213333e+00| 0:0:00| chol  1  1
 7|1.000|1.000|1.6e-09|6.1e-07|3.2e+00|-9.621290e-01 -4.127246e+00| 0:0:00| chol  1  1
 8|0.884|0.988|6.3e-10|6.8e-08|3.8e-01|-3.740920e+00 -4.116759e+00| 0:0:00| chol  1  1
 9|0.579|0.958|2.1e-09|8.9e-09|2.8e-01|-3.815357e+00 -4.093234e+00| 0:0:00| chol  1  1
10|0.712|0.752|6.1e-10|2.9e-09|1.3e-01|-3.960024e+00 -4.092289e+00| 0:0:00| chol  1  1
11|1.000|1.000|3.6e-13|1.8e-10|2.2e-02|-4.067668e+00 -4.089209e+00| 0:0:00| chol  1  1
12|0.975|0.975|6.0e-11|1.2e-11|6.2e-04|-4.088317e+00 -4.088936e+00| 0:0:00| chol  1  1
13|0.988|0.989|8.4e-12|1.6e-12|7.2e-06|-4.088919e+00 -4.088926e+00| 0:0:00| chol  1  1
14|0.996|0.993|7.2e-12|1.7e-12|9.5e-08|-4.088926e+00 -4.088926e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
```

```
-----------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.08892610e+00
 dual   objective value = -4.08892619e+00
 gap := trace(XZ)       = 9.47e-08
 relative gap           = 1.03e-08
 actual relative gap    = 1.00e-08
 rel. primal infeas     = 7.21e-12
 rel. dual   infeas     = 1.69e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.7e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.6e+01, 1.8e+02, 5.8e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 7.2e-12  0.0e+00  2.4e-12  0.0e+00  1.0e-08  1.0e-08
-----------------------------------------------------------------

ans =

    4.0889

Iteration   7   Total error is: 0.032199

 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|4.6e+05| 1.135061e+04  0.000000e+00| 0:0:00| chol  1  1
 1|0.958|0.968|4.2e-02|1.7e-01|3.3e+04| 1.114199e+04  1.563610e+01| 0:0:00| chol  1  1
 2|1.000|1.000|1.0e-07|2.0e-02|9.0e+03| 6.807778e+03 -1.323267e+01| 0:0:00| chol  1  1
 3|0.993|0.999|5.0e-08|6.1e-03|3.3e+02| 2.451477e+02 -5.385540e+00| 0:0:00| chol  1  1
 4|0.699|1.000|1.3e-07|6.1e-04|1.9e+02| 1.781004e+02 -5.032495e+00| 0:0:00| chol  1  1
 5|1.000|0.916|1.0e-08|1.1e-04|3.3e+01| 2.839801e+01 -4.260552e+00| 0:0:00| chol  1  1
 6|0.963|1.000|3.8e-09|6.1e-06|1.0e+01| 6.083974e+00 -4.224663e+00| 0:0:00| chol  1  1
 7|1.000|1.000|1.6e-09|6.1e-07|3.7e+00|-3.821031e-01 -4.124738e+00| 0:0:00| chol  1  1
 8|0.896|0.996|5.7e-10|6.4e-08|4.0e-01|-3.713667e+00 -4.114533e+00| 0:0:00| chol  1  1
 9|0.573|0.983|2.1e-09|7.2e-09|2.9e-01|-3.796145e+00 -4.089833e+00| 0:0:00| chol  1  1
10|0.729|0.758|5.8e-10|2.4e-09|1.3e-01|-3.954175e+00 -4.088650e+00| 0:0:00| chol  1  1
11|1.000|1.000|1.4e-13|1.8e-10|1.9e-02|-4.066572e+00 -4.085733e+00| 0:0:00| chol  1  1
12|0.978|0.977|5.0e-11|1.1e-11|4.6e-04|-4.085054e+00 -4.085511e+00| 0:0:00| chol  1  1
13|0.989|0.989|4.7e-12|1.6e-12|5.2e-06|-4.085499e+00 -4.085504e+00| 0:0:00| chol  1  1
14|0.997|0.994|8.8e-11|1.0e-12|7.1e-08|-4.085504e+00 -4.085504e+00| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
-----------------------------------------------------------------
 number of iterations   = 14
 primal objective value = -4.08550409e+00
 dual   objective value = -4.08550415e+00
 gap := trace(XZ)       = 7.12e-08
 relative gap           = 7.76e-09
```

```
 actual relative gap    = 6.45e-09
 rel. primal infeas     = 8.76e-11
 rel. dual   infeas     = 1.01e-12
 norm(X), norm(y), norm(Z) = 2.7e+01, 7.7e+01, 5.4e+01
 norm(A), norm(b), norm(C) = 3.6e+01, 1.8e+02, 5.8e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 8.8e-11  0.0e+00  1.4e-12  0.0e+00  6.4e-09  7.8e-09
------------------------------------------------------------------

ans =

    4.0855

Iteration   8   Total error is: 0.032163
The total representation error of the testing signals is: 0.02636
>>
```