```
>> 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  = 40
*********************************************************************
   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|1.5e+02|7.0e+06|-6.589587e+02  0.000000e+00| 0:0:00| chol  1  1
 1|0.981|0.943|1.9e-02|8.7e+00|4.0e+05|-1.773223e+01  8.876504e+02| 0:0:00| chol  2  2
 2|1.000|0.964|3.1e-07|3.2e-01|1.6e+04| 9.568720e+00 -2.495676e+02| 0:0:00| chol  2  2
 3|1.000|0.990|1.5e-07|7.1e-03|3.5e+02|-9.641197e-01 -9.033198e+00| 0:0:00| chol  2  2
 4|0.928|0.940|1.6e-07|1.5e-03|5.6e+01|-6.849035e+00 -6.965314e+00| 0:0:00| chol  2  2
 5|0.973|0.942|1.2e-08|4.2e-04|1.3e+01|-8.398479e+00 -8.022390e+00| 0:0:00| chol  3  2
 6|0.330|0.486|3.4e-08|2.7e-04|7.9e+00|-9.365302e+00 -8.414055e+00| 0:0:00| chol  2  2
 7|0.083|0.142|1.3e-08|2.3e-04|7.3e+00|-9.822155e+00 -8.667153e+00| 0:0:00| chol  2  2
 8|0.047|0.159|1.2e-08|2.0e-04|6.5e+00|-1.018021e+01 -9.025610e+00| 0:0:00| chol  3  2
 9|0.061|0.242|1.2e-08|1.5e-04|5.3e+00|-1.065145e+01 -9.526921e+00| 0:0:00| chol  2  2
10|0.088|0.212|1.2e-08|1.2e-04|4.7e+00|-1.100320e+01 -1.008130e+01| 0:0:00| chol  3  2
11|0.132|0.376|1.1e-08|7.4e-05|3.7e+00|-1.120676e+01 -1.115446e+01| 0:0:00| chol  2  2
12|0.318|0.677|1.2e-08|2.4e-05|1.8e+00|-1.158152e+01 -1.201779e+01| 0:0:00| chol  3  3
13|0.617|0.923|1.4e-08|1.9e-06|7.1e-01|-1.196495e+01 -1.257817e+01| 0:0:00| chol  3  2
14|0.909|0.848|4.2e-09|2.9e-07|7.8e-02|-1.243929e+01 -1.250540e+01| 0:0:00| chol  3  4
15|0.937|0.972|2.4e-08|1.1e-08|8.4e-03|-1.248261e+01 -1.249050e+01| 0:0:00| chol  5  6
16|0.970|0.977|7.5e-08|1.5e-09|2.9e-04|-1.248851e+01 -1.248858e+01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30 ^18
17|0.025|0.031|3.5e-07|2.1e-09|3.0e-04|-1.248907e+01 -1.248858e+01| 0:0:00| lu 30 ^17
18|0.031|0.075|3.8e-07|2.7e-09|3.2e-04|-1.248958e+01 -1.248858e+01| 0:0:00|
  stop: steps too short consecutively
-------------------------------------------------------------------
 number of iterations   = 18
 primal objective value = -1.24885110e+01
 dual   objective value = -1.24885771e+01
 gap := trace(XZ)       = 2.85e-04
 relative gap           = 1.10e-05
 actual relative gap    = 2.55e-06
 rel. primal infeas     = 7.54e-08
 rel. dual   infeas     = 1.51e-09
 norm(X), norm(y), norm(Z) = 2.5e+03, 4.8e+01, 2.5e+01
 norm(A), norm(b), norm(C) = 3.1e+03, 1.6e+03, 4.4e+01
 Total CPU time (secs)  = 0.13
 CPU time per iteration = 0.01
 termination code       = -5
 DIMACS errors: 1.6e-07  0.0e+00  2.1e-09  0.0e+00  2.5e-06  1.1e-05
-------------------------------------------------------------------

ans =
```

    12.4886

 num. of constraints = 33
 dim. of socp   var = 34,   num. of socp blk = 1
 dim. of linear var = 40
****
    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|1.8e+02|7.7e+06|-5.989209e+02 0.000000e+00| 0:0:00| chol 1 1
 1|0.977|0.935|2.3e-02|1.2e+01|5.0e+05|-2.045677e+01 2.814397e+03| 0:0:00| chol 2 2
 2|1.000|0.940|3.5e-07|7.1e-01|3.4e+04| 4.440347e+00 -3.067221e+02| 0:0:00| chol 1 2
 3|1.000|0.992|2.9e-07|9.3e-03|5.0e+02| 2.042703e+00 -1.021381e+01| 0:0:00| chol 2 2
 4|0.936|0.985|5.3e-08|1.3e-03|5.6e+01|-6.168288e+00 -7.042292e+00| 0:0:00| chol 2 2
 5|1.000|0.817|1.2e-08|5.2e-04|1.6e+01|-7.517378e+00 -7.516739e+00| 0:0:00| chol 2 2
 6|0.499|0.819|1.6e-08|1.8e-04|5.2e+00|-8.213239e+00 -7.932464e+00| 0:0:00| chol 3 3
 7|0.338|0.349|1.4e-07|1.3e-04|4.0e+00|-8.725374e+00 -8.377535e+00| 0:0:00| chol 3 2
 8|0.163|0.597|1.2e-07|5.8e-05|2.1e+00|-9.165709e+00 -9.041458e+00| 0:0:00| chol 3 3
 9|0.515|0.465|1.0e-07|3.2e-05|1.4e+00|-9.638826e+00 -9.599226e+00| 0:0:00| chol 3 3
10|0.563|0.671|3.4e-08|1.1e-05|7.7e-01|-9.867740e+00 -1.012726e+01| 0:0:00| chol 3 3
11|0.809|0.873|9.6e-09|1.7e-06|2.7e-01|-1.013032e+01 -1.032844e+01| 0:0:00| chol 3 3
12|0.889|0.883|1.5e-09|2.6e-07|3.0e-02|-1.029773e+01 -1.031841e+01| 0:0:00| chol 4 3
13|0.987|0.971|5.6e-09|3.0e-08|1.6e-03|-1.031711e+01 -1.031760e+01| 0:0:00| chol 7 9
14|0.988|0.988|3.4e-09|4.2e-10|2.1e-05|-1.031812e+01 -1.031812e+01| 0:0:00| chol
   linsysolve: Schur complement matrix not positive definite
   switch to LU factor. lu 30 ^29
15|1.000|0.810|1.1e-08|1.0e-10|9.6e-06|-1.031814e+01 -1.031814e+01| 0:0:00| lu 30 19
16|1.000|0.984|3.1e-08|3.1e-12|6.0e-07|-1.031814e+01 -1.031813e+01| 0:0:00|
   stop: max(relative gap, infeasibilities) < 1.00e-07
----
 number of iterations   = 16
 primal objective value = -1.03181359e+01
 dual   objective value = -1.03181307e+01
 gap := trace(XZ)   = 5.95e-07
 relative gap   = 2.75e-08
 actual relative gap   = -2.39e-07
 rel. primal infeas   = 3.12e-08
 rel. dual   infeas   = 3.15e-12
 norm(X), norm(y), norm(Z) = 2.0e+03, 5.0e+01, 2.8e+01
 norm(A), norm(b), norm(C) = 6.4e+03, 2.7e+03, 4.4e+01
 Total CPU time (secs) = 0.12
 CPU time per iteration = 0.01
 termination code   = 0
 DIMACS errors: 5.1e-08 0.0e+00 4.3e-12 0.0e+00 -2.4e-07 2.8e-08
----

ans =

    10.3181

Iteration   2   Total error is: 0.065434

```
 num. of constraints = 33
 dim. of socp  var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 40
 *******************************************************************
    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|1.8e+02|5.3e+06|-6.325636e+02  0.000000e+00| 0:0:00| chol  1  1
  1|0.980|0.940|2.0e-02|1.1e+01|3.2e+05|-1.890042e+01  2.860311e+03| 0:0:00| chol  1  1
  2|1.000|0.938|2.1e-07|7.0e-01|2.2e+04| 2.235388e+00 -1.136115e+02| 0:0:00| chol  2  2
  3|1.000|0.990|6.0e-08|1.0e-02|3.6e+02| 3.619939e-01 -8.333365e+00| 0:0:00| chol  2  2
  4|0.910|0.977|3.1e-08|1.4e-03|4.1e+01|-6.563089e+00 -6.899185e+00| 0:0:00| chol  2  2
  5|1.000|0.758|1.8e-08|6.0e-04|1.3e+01|-7.665174e+00 -7.432313e+00| 0:0:00| chol  2  2
  6|0.548|0.750|7.4e-09|2.3e-04|4.7e+00|-8.391941e+00 -7.853654e+00| 0:0:00| chol  3  3
  7|0.400|0.295|1.3e-08|1.7e-04|3.9e+00|-8.933956e+00 -8.312625e+00| 0:0:00| chol  2  2
  8|0.154|0.606|1.3e-08|7.3e-05|2.0e+00|-9.423191e+00 -9.185456e+00| 0:0:00| chol  3  3
  9|0.316|0.547|1.4e-08|3.5e-05|1.2e+00|-9.822430e+00 -9.756852e+00| 0:0:00| chol  3  3
 10|0.406|0.701|1.2e-08|1.1e-05|7.2e-01|-9.998448e+00 -1.027786e+01| 0:0:00| chol  3  3
 11|0.782|0.824|5.0e-09|2.1e-06|2.5e-01|-1.025838e+01 -1.043481e+01| 0:0:00| chol  2  3
 12|0.885|0.965|1.0e-09|1.5e-07|2.7e-02|-1.041895e+01 -1.044127e+01| 0:0:00| chol  5  4
 13|0.945|0.998|6.7e-09|2.3e-08|3.6e-03|-1.043826e+01 -1.044113e+01| 0:0:00| chol  5  5
 14|0.986|0.987|4.2e-09|7.3e-09|5.4e-05|-1.044107e+01 -1.044087e+01| 0:0:00| chol
   linsysolve: Schur complement matrix not positive definite
   switch to LU factor. lu 30    2
 15|1.000|1.000|8.1e-08|2.3e-10|2.4e-04|-1.044112e+01 -1.044132e+01| 0:0:00| lu 30   30
 16|1.000|0.934|1.3e-07|2.5e-10|8.4e-05|-1.044132e+01 -1.044112e+01| 0:0:00| lu 30 ^15
 17|0.861|0.709|2.0e-07|1.1e-10|1.3e-05|-1.044165e+01 -1.044110e+01| 0:0:00| lu 30 ^ 7
 18|0.254|0.523|1.9e-07|8.2e-11|1.1e-05|-1.044115e+01 -1.044110e+01| 0:0:00| lu 30 ^ 8
 19|0.129|0.264|2.3e-07|8.9e-11|1.0e-05|-1.044125e+01 -1.044110e+01| 0:0:00| lu 30 ^17
 20|0.037|0.059|2.1e-07|1.1e-10|1.1e-05|-1.044126e+01 -1.044110e+01| 0:0:00|
   lack of progress in infeas
 -------------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -1.04416453e+01
 dual   objective value = -1.04410958e+01
 gap := trace(XZ)       = 1.27e-05
 relative gap           = 5.78e-07
 actual relative gap    = -2.51e-05
 rel. primal infeas     = 2.01e-07
 rel. dual   infeas     = 1.09e-10
 norm(X), norm(y), norm(Z) = 1.8e+03, 5.0e+01, 2.8e+01
 norm(A), norm(b), norm(C) = 7.0e+03, 2.5e+03, 4.4e+01
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.2e-07  0.0e+00  1.5e-10  0.0e+00  -2.5e-05  5.8e-07
 -------------------------------------------------------------------


ans =

   10.4411
```

Iteration   3   Total error is: 0.065784

 num. of constraints = 33
 dim. of socp   var = 34,   num. of socp blk = 1
 dim. of linear var = 40
****
   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|1.8e+02|5.9e+06|-6.564550e+02   0.000000e+00| 0:0:00| chol 1 1
 1|0.982|0.943|1.8e-02|1.1e+01|3.4e+05|-1.734258e+01   2.731068e+03| 0:0:00| chol 1 1
 2|1.000|0.942|2.4e-07|6.2e-01|2.2e+04| 2.887545e+00 -1.230405e+02| 0:0:00| chol 2 2
 3|1.000|0.991|5.9e-08|9.2e-03|3.6e+02| 7.382067e-01 -8.249936e+00| 0:0:00| chol 2 2
 4|0.914|0.982|4.0e-08|1.3e-03|4.2e+01|-6.314095e+00 -6.760353e+00| 0:0:00| chol 2 2
 5|1.000|0.751|1.3e-07|5.9e-04|1.4e+01|-7.459037e+00 -7.235853e+00| 0:0:00| chol 2 2
 6|0.518|0.732|6.1e-08|2.4e-04|5.0e+00|-8.235910e+00 -7.633087e+00| 0:0:00| chol 3 2
 7|0.567|0.306|2.5e-07|1.7e-04|4.2e+00|-8.952904e+00 -8.136673e+00| 0:0:00| chol 3 3
 8|0.151|0.458|2.2e-07|9.8e-05|3.0e+00|-9.324837e+00 -9.089378e+00| 0:0:00| chol 3 3
 9|0.330|0.650|1.5e-07|3.6e-05|1.4e+00|-9.713019e+00 -9.655504e+00| 0:0:00| chol 3 2
10|0.718|0.710|4.4e-08|1.1e-05|6.5e-01|-1.001192e+01 -1.022648e+01| 0:0:00| chol 2 3
11|0.879|0.906|6.6e-09|1.3e-06|1.3e-01|-1.027935e+01 -1.036848e+01| 0:0:00| chol 3 3
12|0.884|1.000|1.5e-09|7.8e-08|2.1e-02|-1.035628e+01 -1.037454e+01| 0:0:00| chol 4 4
13|0.926|1.000|2.4e-09|2.3e-08|2.7e-03|-1.037061e+01 -1.037258e+01| 0:0:00| chol 5 6
14|0.984|0.986|2.0e-09|7.3e-09|4.6e-05|-1.037276e+01 -1.037258e+01| 0:0:00| chol
   linsysolve: Schur complement matrix not positive definite
   switch to LU factor. lu 30   3
15|0.965|1.000|8.1e-08|1.4e-11|4.7e-06|-1.037285e+01 -1.037279e+01| 0:0:00| lu 30 ^18
16|1.000|0.808|5.7e-08|4.9e-12|7.9e-07|-1.037278e+01 -1.037279e+01| 0:0:00|
   stop: max(relative gap, infeasibilities) < 1.00e-07
----
 number of iterations   = 16
 primal objective value = -1.03727767e+01
 dual   objective value = -1.03727934e+01
 gap := trace(XZ)   = 7.92e-07
 relative gap   = 3.64e-08
 actual relative gap   = 7.71e-07
 rel. primal infeas   = 5.66e-08
 rel. dual   infeas   = 4.88e-12
 norm(X), norm(y), norm(Z) = 1.9e+03, 5.0e+01, 2.8e+01
 norm(A), norm(b), norm(C) = 7.1e+03, 2.2e+03, 4.4e+01
 Total CPU time (secs) = 0.13
 CPU time per iteration = 0.01
 termination code   = 0
 DIMACS errors: 9.7e-08 0.0e+00 6.6e-12 0.0e+00 7.7e-07 3.6e-08
----

ans =

   10.3728

Iteration   4   Total error is: 0.065443

```
 num. of constraints = 33
 dim. of socp  var  = 34,   num. of socp blk  =  1
 dim. of linear var  = 40
*********************************************************************
   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|1.8e+02|6.1e+06|-6.571636e+02  0.000000e+00| 0:0:00| chol 1  1
 1|0.982|0.943|1.8e-02|1.1e+01|3.5e+05|-1.727720e+01  2.748910e+03| 0:0:00| chol 1  2
 2|1.000|0.942|2.2e-07|6.2e-01|2.2e+04| 3.002417e+00 -1.283945e+02| 0:0:00| chol 2  2
 3|1.000|0.991|4.8e-08|9.1e-03|3.7e+02| 8.448163e-01 -8.279249e+00| 0:0:00| chol 2  2
 4|0.916|0.983|3.7e-08|1.3e-03|4.3e+01|-6.253867e+00 -6.733725e+00| 0:0:00| chol 2  2
 5|1.000|0.753|2.7e-08|5.9e-04|1.4e+01|-7.408384e+00 -7.202520e+00| 0:0:00| chol 2  2
 6|0.518|0.731|4.7e-09|2.3e-04|5.1e+00|-8.192718e+00 -7.594023e+00| 0:0:00| chol 3  3
 7|0.574|0.306|3.4e-08|1.7e-04|4.3e+00|-8.924713e+00 -8.099650e+00| 0:0:00| chol 2  2
 8|0.153|0.448|3.0e-08|1.0e-04|3.1e+00|-9.287442e+00 -9.054896e+00| 0:0:00| chol 3  2
 9|0.329|0.644|2.0e-08|3.7e-05|1.4e+00|-9.680662e+00 -9.615853e+00| 0:0:00| chol 3  3
10|0.700|0.717|1.6e-08|1.1e-05|6.8e-01|-9.972121e+00 -1.020681e+01| 0:0:00| chol 3  3
11|0.880|0.930|3.0e-09|1.0e-06|1.3e-01|-1.025361e+01 -1.034952e+01| 0:0:00| chol 3  3
12|0.844|1.000|1.2e-09|7.8e-08|2.9e-02|-1.032642e+01 -1.035276e+01| 0:0:00| chol 4  5
13|0.942|0.925|3.2e-09|2.7e-08|2.9e-03|-1.034732e+01 -1.034932e+01| 0:0:00| chol 7  7
14|0.980|0.981|2.1e-09|7.5e-09|6.5e-05|-1.034934e+01 -1.034917e+01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30   2
15|1.000|1.000|2.0e-08|6.1e-12|2.1e-06|-1.034944e+01 -1.034938e+01| 0:0:00|
  stop: max(relative gap, infeasibilities) < 1.00e-07
---------------------------------------------------------------------
 number of iterations  = 15
 primal objective value = -1.03494354e+01
 dual   objective value = -1.03493820e+01
 gap := trace(XZ)      = 2.11e-06
 relative gap          = 9.72e-08
 actual relative gap    = -2.46e-06
 rel. primal infeas     = 2.03e-08
 rel. dual   infeas     = 6.06e-12
 norm(X), norm(y), norm(Z) = 1.9e+03, 5.0e+01, 2.8e+01
 norm(A), norm(b), norm(C) = 7.1e+03, 2.4e+03, 4.4e+01
 Total CPU time (secs)  = 0.11
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 3.4e-08  0.0e+00  8.2e-12  0.0e+00  -2.5e-06  9.7e-08
---------------------------------------------------------------------


ans =

   10.3494


Iteration   5   Total error is: 0.065381

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

```
  dim. of linear var  = 40
*****************************************************************
   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|1.9e+02|6.4e+06|-6.675787e+02  0.000000e+00| 0:0:00| chol  1  1
 1|0.983|0.944|1.7e-02|1.0e+01|3.6e+05|-1.651708e+01  2.712428e+03| 0:0:00| chol  1  1
 2|1.000|0.944|2.2e-07|5.9e-01|2.2e+04| 3.172927e+00 -1.276767e+02| 0:0:00| chol  2  2
 3|1.000|0.992|4.4e-08|8.6e-03|3.6e+02| 9.297297e-01 -8.206647e+00| 0:0:00| chol  2  2
 4|0.917|0.987|3.9e-08|1.3e-03|4.3e+01|-6.176844e+00 -6.705380e+00| 0:0:00| chol  2  2
 5|1.000|0.761|4.9e-08|5.7e-04|1.4e+01|-7.311816e+00 -7.152085e+00| 0:0:00| chol  2  2
 6|0.516|0.726|8.6e-09|2.3e-04|5.1e+00|-8.109887e+00 -7.512693e+00| 0:0:00| chol  3  3
 7|0.708|0.315|1.7e-07|1.7e-04|4.2e+00|-8.955145e+00 -8.011212e+00| 0:0:00| chol  3  3
 8|0.170|0.372|1.5e-07|1.1e-04|3.4e+00|-9.102325e+00 -8.975871e+00| 0:0:00| chol  3  3
 9|0.364|0.603|9.7e-08|4.5e-05|1.6e+00|-9.587607e+00 -9.385494e+00| 0:0:00| chol  3  3
10|0.608|0.836|4.1e-08|8.1e-06|8.1e-01|-9.769144e+00 -1.025125e+01| 0:0:00| chol  2  2
11|0.915|0.884|2.0e-09|1.2e-06|8.8e-02|-1.019454e+01 -1.024489e+01| 0:0:00| chol  3  3
12|0.761|1.000|1.8e-09|7.7e-08|2.9e-02|-1.022527e+01 -1.025140e+01| 0:0:00| chol  4  4
13|0.973|0.907|5.4e-09|2.8e-08|3.1e-03|-1.024533e+01 -1.024751e+01| 0:0:00| chol  8  8
14|0.947|0.977|1.6e-08|8.0e-09|1.9e-04|-1.024716e+01 -1.024709e+01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 30    5
15|0.986|0.978|5.9e-08|2.0e-10|9.7e-06|-1.024722e+01 -1.024728e+01| 0:0:00| lu 14 ^ 3
16|0.907|0.811|1.5e-07|4.6e-11|2.6e-06|-1.024722e+01 -1.024729e+01| 0:0:00| lu 30 ^10
17|0.595|0.586|4.7e-07|2.3e-11|1.6e-06|-1.024720e+01 -1.024729e+01| 0:0:00| lu 30 ^11
18|0.029|0.031|4.5e-07|2.8e-11|1.8e-06|-1.024720e+01 -1.024729e+01| 0:0:00| lu 19 ^ 2
19|0.626|0.600|7.2e-07|1.5e-11|1.3e-06|-1.024729e+01 -1.024729e+01| 0:0:00|
  lack of progress in infeas
-------------------------------------------------------------------
 number of iterations   = 19
 primal objective value = -1.02472176e+01
 dual   objective value = -1.02472861e+01
 gap := trace(XZ)       = 2.60e-06
 relative gap           = 1.21e-07
 actual relative gap    = 3.19e-06
 rel. primal infeas     = 1.52e-07
 rel. dual   infeas     = 4.55e-11
 norm(X), norm(y), norm(Z) = 1.9e+03, 5.0e+01, 2.8e+01
 norm(A), norm(b), norm(C) = 7.2e+03, 2.3e+03, 4.4e+01
 Total CPU time (secs)  = 0.14
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 2.5e-07  0.0e+00  6.2e-11  0.0e+00  3.2e-06  1.2e-07
-------------------------------------------------------------------


ans =

   10.2473


Iteration   6   Total error is: 0.065024

 num. of constraints = 33
```

```
 dim. of socp   var  = 34,    num. of socp blk  =  1
 dim. of linear var  = 40
*********************************************************************
   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|1.8e+02|6.7e+06|-6.758810e+02  0.000000e+00| 0:0:00| chol  1  1
 1|0.984|0.945|1.6e-02|1.0e+01|3.7e+05|-1.596765e+01  2.557158e+03| 0:0:00| chol  1  1
 2|1.000|0.946|2.3e-07|5.5e-01|2.2e+04| 3.492596e+00 -1.343013e+02| 0:0:00| chol  2  2
 3|1.000|0.992|5.2e-08|8.1e-03|3.6e+02| 1.020771e+00 -8.194299e+00| 0:0:00| chol  2  2
 4|0.918|0.989|4.8e-08|1.2e-03|4.3e+01|-6.080807e+00 -6.647401e+00| 0:0:00| chol  2  2
 5|1.000|0.787|2.7e-08|5.4e-04|1.3e+01|-7.213034e+00 -7.097566e+00| 0:0:00| chol  2  2
 6|0.500|0.718|6.6e-09|2.3e-04|5.1e+00|-8.018689e+00 -7.426219e+00| 0:0:00| chol  3  3
 7|0.792|0.314|1.4e-07|1.7e-04|4.2e+00|-8.929038e+00 -7.919393e+00| 0:0:00| chol  2  3
 8|0.169|0.340|1.2e-07|1.1e-04|3.6e+00|-8.931419e+00 -8.919854e+00| 0:0:00| chol  2  2
 9|0.411|0.593|7.2e-08|4.8e-05|1.7e+00|-9.497607e+00 -9.261917e+00| 0:0:00| chol  3  3
10|0.533|0.959|4.3e-08|2.8e-06|9.4e-01|-9.575310e+00 -1.040879e+01| 0:0:00| chol  3  3
11|1.000|0.794|5.6e-09|7.8e-07|2.6e-01|-9.986445e+00 -1.021631e+01| 0:0:00| chol  3  3
12|0.898|0.788|6.0e-09|2.3e-07|4.1e-02|-1.013832e+01 -1.017191e+01| 0:0:00| chol  4  4
13|0.963|0.870|6.8e-09|5.1e-08|5.7e-03|-1.015733e+01 -1.016140e+01| 0:0:00| chol  6  8
14|0.933|0.969|7.0e-09|9.7e-09|7.1e-04|-1.015956e+01 -1.015997e+01| 0:0:00| chol
  linsysolve: Schur complement matrix not positive definite
  switch to LU factor. lu 13    2
15|0.955|0.775|1.4e-08|2.9e-09|2.7e-04|-1.015993e+01 -1.016012e+01| 0:0:00| lu 30    3
16|0.942|0.952|3.3e-08|1.8e-10|1.4e-05|-1.015989e+01 -1.016002e+01| 0:0:00| lu 26 ^ 6
17|0.643|0.841|3.3e-07|4.7e-11|6.8e-06|-1.015970e+01 -1.016001e+01| 0:0:00| lu 30   30
18|0.339|0.439|7.4e-07|4.1e-11|5.0e-06|-1.015960e+01 -1.016001e+01| 0:0:00| lu 30 ^22
19|0.098|0.337|7.5e-07|4.0e-11|4.7e-06|-1.015960e+01 -1.016001e+01| 0:0:00| lu 30 ^12
20|0.121|0.649|6.3e-07|2.5e-11|4.0e-06|-1.015970e+01 -1.016001e+01| 0:0:00|
  lack of progress in infeas
-------------------------------------------------------------------
 number of iterations   = 20
 primal objective value = -1.01596971e+01
 dual   objective value = -1.01600136e+01
 gap := trace(XZ)       = 6.77e-06
 relative gap           = 3.18e-07
 actual relative gap    = 1.48e-05
 rel. primal infeas     = 3.28e-07
 rel. dual   infeas     = 4.74e-11
 norm(X), norm(y), norm(Z) = 2.0e+03, 5.0e+01, 2.9e+01
 norm(A), norm(b), norm(C) = 7.0e+03, 2.2e+03, 4.4e+01
 Total CPU time (secs) = 0.12
 CPU time per iteration = 0.01
 termination code       =  0
 DIMACS errors: 5.5e-07  0.0e+00  6.4e-11  0.0e+00  1.5e-05  3.2e-07
-------------------------------------------------------------------


ans =

   10.1600


Iteration   7   Total error is: 0.064749
```

```
 num. of constraints = 33
 dim. of socp  var  = 34,   num. of socp blk =  1
 dim. of linear var = 40
 *********************************************************************
    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|1.8e+02|6.9e+06|-6.848169e+02  0.000000e+00| 0:0:00| chol  1  1
  1|0.984|0.946|1.6e-02|9.6e+00|3.7e+05|-1.544261e+01  2.242737e+03| 0:0:00| chol  1  1
  2|1.000|0.949|2.6e-07|5.0e-01|2.1e+04| 3.940608e+00 -1.427302e+02| 0:0:00| chol  2  2
  3|1.000|0.992|1.9e-07|7.6e-03|3.5e+02| 9.753632e-01 -8.178197e+00| 0:0:00| chol  2  2
  4|0.917|0.988|6.5e-08|1.2e-03|4.4e+01|-6.027278e+00 -6.584601e+00| 0:0:00| chol  2  2
  5|1.000|0.833|4.5e-08|5.0e-04|1.2e+01|-7.169400e+00 -7.076871e+00| 0:0:00| chol  2  2
  6|0.470|0.707|6.6e-09|2.2e-04|4.9e+00|-7.986551e+00 -7.377632e+00| 0:0:00| chol  3  3
  7|0.911|0.309|1.5e-07|1.6e-04|4.1e+00|-8.970011e+00 -7.874972e+00| 0:0:00| chol  3  3
  8|0.147|0.317|1.3e-07|1.1e-04|3.8e+00|-8.845821e+00 -8.971733e+00| 0:0:00| chol  2  2
  9|0.489|0.609|6.7e-08|4.6e-05|1.7e+00|-9.489962e+00 -9.272824e+00| 0:0:00| chol  3  3
 10|0.420|1.000|4.0e-08|8.6e-07|1.1e+00|-9.517295e+00 -1.058176e+01| 0:0:00| chol  3  3
 11|1.000|0.691|1.4e-08|4.5e-07|4.2e-01|-9.861165e+00 -1.026762e+01| 0:0:00| chol  3  3
 12|0.888|0.860|6.8e-09|1.3e-07|5.8e-02|-1.010747e+01 -1.016142e+01| 0:0:00| chol  4  4
 13|0.950|0.929|1.5e-08|3.2e-08|5.9e-03|-1.013981e+01 -1.014471e+01| 0:0:00| chol  7  8
 14|0.926|0.972|1.8e-08|9.7e-09|9.5e-04|-1.014273e+01 -1.014341e+01| 0:0:00| chol
   linsysolve: Schur complement matrix not positive definite
   switch to LU factor. lu 20 ^30
 15|0.310|0.350|5.4e-07|8.3e-09|7.3e-04|-1.014403e+01 -1.014343e+01| 0:0:00| lu 13   2
 16|0.530|1.000|2.3e-07|1.1e-09|4.0e-04|-1.014354e+01 -1.014348e+01| 0:0:00| lu 30 ^24
 17|0.220|0.246|5.7e-07|1.8e-09|3.5e-04|-1.014493e+01 -1.014346e+01| 0:0:00| lu 30   4
 18|0.313|0.846|4.8e-07|1.0e-09|2.7e-04|-1.014499e+01 -1.014344e+01| 0:0:00| lu 21  30
 19|0.240|1.000|3.7e-07|6.3e-10|2.3e-04|-1.014402e+01 -1.014345e+01| 0:0:00| lu 28   5
 20|0.936|0.860|2.0e-06|3.2e-10|8.5e-05|-1.014347e+01 -1.014343e+01| 0:0:00| lu 30 ^10
 21|1.000|0.834|5.5e-07|1.6e-10|3.7e-05|-1.014460e+01 -1.014342e+01| 0:0:00| lu 30 ^18
 22|0.010|0.014|5.5e-07|2.6e-10|4.0e-05|-1.014461e+01 -1.014342e+01| 0:0:00| lu 12 ^17
 23|0.581|0.509|7.7e-07|2.2e-10|3.4e-05|-1.014398e+01 -1.014342e+01| 0:0:00| lu 30  30
 24|0.016|0.032|7.9e-07|3.2e-10|3.7e-05|-1.014444e+01 -1.014342e+01| 0:0:00|
   stop: progress is too slow
   stop: progress is bad
   lack of progress in infeas
 -------------------------------------------------------------------
 number of iterations   = 24
 primal objective value = -1.01445998e+01
 dual   objective value = -1.01434184e+01
 gap := trace(XZ)       = 3.75e-05
 relative gap           = 1.76e-06
 actual relative gap    = -5.55e-05
 rel. primal infeas     = 5.46e-07
 rel. dual   infeas     = 1.55e-10
 norm(X), norm(y), norm(Z) = 2.0e+03, 5.0e+01, 2.9e+01
 norm(A), norm(b), norm(C) = 6.5e+03, 1.9e+03, 4.4e+01
 Total CPU time (secs)  = 0.17
 CPU time per iteration = 0.01
 termination code       = -5
```

```
 DIMACS errors: 9.7e-07  0.0e+00  2.1e-10  0.0e+00  -5.5e-05  1.8e-06
-------------------------------------------------------------------

ans =

    10.1434


Iteration   8   Total error is: 0.064724
The total representation error of the testing signals is: 0.29516
>>
```