```
>> demo_Polynomial_Dictionary_Learning
Starting to train the dictionary
solving the quadratic problem with YALMIP...
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37140 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :      b*y         gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            8.44E+02 0.000
  1 : -1.56E+01 7.07E+02 0.000 0.8380 0.9000 0.9000  14.63  1  1  1.3E+00
  2 : -2.03E+01 5.33E+02 0.000 0.7534 0.9000 0.9000  22.02  1  1  2.1E-01
  3 : -2.55E+01 1.48E+02 0.000 0.2773 0.9000 0.9000   4.19  1  1  3.4E-02
  4 : -2.59E+01 3.01E+01 0.000 0.2038 0.9000 0.9000   1.68  1  1  1.7E-02
  5 : -2.53E+01 1.44E+01 0.000 0.4780 0.9000 0.9000   1.26  1  1  7.3E-03
  6 : -2.44E+01 6.69E+00 0.000 0.4644 0.9000 0.9000   1.15  1  1  3.4E-03
  7 : -2.40E+01 3.13E+00 0.000 0.4683 0.9000 0.9000   1.08  1  1  1.6E-03
  8 : -2.38E+01 1.48E+00 0.000 0.4717 0.9000 0.9000   1.03  1  1  7.8E-04
  9 : -2.36E+01 5.35E-01 0.000 0.3623 0.9000 0.9000   1.01  1  1  2.9E-04
 10 : -2.36E+01 2.13E-01 0.000 0.3988 0.9000 0.9000   1.00  1  1  1.2E-04
 11 : -2.35E+01 7.76E-02 0.000 0.3639 0.9000 0.9000   1.00  1  1  4.2E-05
 12 : -2.35E+01 2.71E-02 0.000 0.3495 0.9000 0.9000   1.00  1  1  1.5E-05
 13 : -2.35E+01 6.94E-03 0.000 0.2556 0.9000 0.9000   1.00  1  1  3.8E-06
 14 : -2.35E+01 1.70E-03 0.000 0.2458 0.9000 0.9000   1.00  2  2  9.3E-07
 15 : -2.35E+01 1.29E-04 0.000 0.0760 0.9900 0.9900   1.00  2  2  7.1E-08
 16 : -2.35E+01 9.71E-06 0.199 0.0750 0.9900 0.9900   1.00  3  3  5.3E-09
 17 : -2.35E+01 2.33E-06 0.000 0.2395 0.9000 0.9000   1.00 31 32  1.3E-09
Run into numerical problems.

iter seconds digits       c*x              b*y
 17      1.0   6.9 -2.3519223337e+01 -2.3519226210e+01
|Ax-b| =   2.4e-08, [Ay-c]_+ =   1.2E-09, |x|=  8.8e+00, |y|=  6.3e+01


Detailed timing (sec)
  Pre           IPM          Post
6.200E-02    2.660E-01    3.100E-02
Max-norms: ||b||=3.032919e+02, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 23, ||L.L|| = 85744.2.

ans =

      yalmiptime: 0.3539
      solvertime: 0.3791
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   23.5192

SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37140 + 0, nnz(ADA) = 7225, nnz(L) = 3655
```

```
 it :       b*y       gap   delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :             3.27E+03 0.000
  1 :    1.08E+00 2.65E+03 0.000 0.8114 0.9000 0.9000  14.17  1  1  1.2E+00
  2 :    2.22E+00 2.17E+03 0.000 0.8190 0.9000 0.9000  16.51  1  1  3.3E-01
  3 :   -5.68E+00 1.68E+03 0.000 0.7734 0.9000 0.9000   4.94  1  1  1.7E-01
  4 :   -1.30E+01 7.97E+02 0.000 0.4751 0.9000 0.9000   3.86  1  1  5.2E-02
  5 :   -1.69E+01 5.66E+01 0.000 0.0710 0.9900 0.9900   2.02  1  1  1.6E-02
  6 :   -1.21E+01 2.43E+01 0.000 0.4284 0.9000 0.9000   1.32  1  1  1.7E-02
  7 :   -8.31E+00 1.31E+01 0.000 0.5384 0.9000 0.9000   1.13  1  1  1.9E-02
  8 :   -6.10E+00 7.20E+00 0.000 0.5513 0.9000 0.9000   1.05  1  1  1.6E-02
  9 :   -5.66E+00 2.47E+00 0.000 0.3436 0.9000 0.9000   1.03  1  1  5.8E-03
 10 :   -5.49E+00 9.70E-01 0.000 0.3922 0.9000 0.9000   1.01  1  1  2.3E-03
 11 :   -5.43E+00 3.51E-01 0.000 0.3616 0.9000 0.9000   1.00  1  1  8.6E-04
 12 :   -5.40E+00 1.53E-01 0.000 0.4350 0.9000 0.9000   1.00  1  2  3.8E-04
 13 :   -5.38E+00 5.09E-02 0.000 0.3335 0.9000 0.9000   1.00  2  2  1.3E-04
 14 :   -5.38E+00 1.70E-02 0.000 0.3343 0.9000 0.9000   1.00  2  2  4.2E-05
 15 :   -5.38E+00 6.10E-03 0.000 0.3585 0.9000 0.9000   1.00  2  2  1.5E-05
 16 :   -5.38E+00 1.86E-03 0.000 0.3050 0.9000 0.9000   1.00  2  2  4.6E-06
 17 :   -5.38E+00 5.99E-04 0.000 0.3219 0.9000 0.9000   1.00  2  2  1.5E-06
 18 :   -5.38E+00 1.59E-04 0.000 0.2662 0.9000 0.9000   1.00 12 12  4.0E-07
 19 :   -5.38E+00 6.31E-05 0.000 0.3959 0.9000 0.9000   1.00 34 31  1.6E-07
 20 :   -5.38E+00 3.58E-05 0.000 0.5665 0.9000 0.9000   1.00 49 46  8.9E-08
Run into numerical problems.

 iter seconds digits       c*x              b*y
 20     1.0   5.2 -5.3765338881e+00 -5.3765824868e+00
|Ax-b| =   3.5e-07, [Ay-c]_+ =   3.4E-09, |x|=  3.3e+01, |y|= 9.8e+01


Detailed timing (sec)
   Pre          IPM         Post
1.500E-02    2.340E-01    1.600E-02
Max-norms: ||b||=1.176472e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 22, ||L.L|| = 13671.7.
```

ans =

```
      yalmiptime: 0.0707
      solvertime: 0.2573
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
     solveroutput: [1x1 struct]
```

ans =

    5.3766

```
Iteration   2   Total error is: 0.0094565
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37140 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :       b*y       gap   delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :             4.56E+03 0.000
  1 :   -2.04E+00 3.71E+03 0.000 0.8141 0.9000 0.9000  14.21  1  1  1.2E+00
```

```
    2 :   -2.01E+00 3.02E+03 0.000 0.8132 0.9000 0.9000   16.96  1  1  3.1E-01
    3 :   -9.77E+00 2.29E+03 0.000 0.7585 0.9000 0.9000    4.82  1  1  1.6E-01
    4 :   -1.60E+01 1.02E+03 0.000 0.4442 0.9000 0.9000    3.66  1  1  4.6E-02
    5 :   -1.82E+01 7.12E+01 0.000 0.0699 0.9900 0.9900    1.93  1  1  1.5E-02
    6 :   -1.27E+01 3.28E+01 0.000 0.4606 0.9000 0.9000    1.30  1  1  1.5E-02
    7 :   -7.31E+00 1.66E+01 0.000 0.5066 0.9000 0.9000    1.12  1  1  1.5E-02
    8 :   -5.10E+00 9.19E+00 0.000 0.5537 0.9000 0.9000    1.04  1  1  1.7E-02
    9 :   -4.57E+00 3.31E+00 0.000 0.3602 0.9000 0.9000    1.02  1  1  9.7E-03
   10 :   -4.38E+00 1.41E+00 0.000 0.4267 0.9000 0.9000    1.00  1  1  4.3E-03
   11 :   -4.32E+00 4.83E-01 0.000 0.3416 0.9000 0.9000    1.00  1  1  1.5E-03
   12 :   -4.29E+00 1.93E-01 0.000 0.3999 0.9000 0.9000    1.00  1  1  6.1E-04
   13 :   -4.28E+00 6.77E-02 0.000 0.3506 0.9000 0.9000    1.00  2  2  2.1E-04
   14 :   -4.27E+00 2.36E-02 0.000 0.3488 0.9000 0.9000    1.00  2  2  7.5E-05
   15 :   -4.27E+00 7.91E-03 0.000 0.3352 0.9000 0.9000    1.00  2  2  2.5E-05
   16 :   -4.27E+00 3.25E-03 0.000 0.4104 0.9000 0.9000    1.00  2  2  1.0E-05
   17 :   -4.27E+00 1.18E-03 0.000 0.3646 0.9000 0.9000    1.00  2  2  3.8E-06
   18 :   -4.27E+00 3.38E-04 0.000 0.2858 0.9000 0.9000    1.00  7  8  1.1E-06
   19 :   -4.27E+00 1.10E-04 0.000 0.3248 0.9000 0.9000    1.00 15 18  3.5E-07
   20 :   -4.27E+00 5.66E-06 0.000 0.0515 0.9900 0.9900    1.00 33 32  1.8E-08
Run into numerical problems.

iter seconds digits       c*x               b*y
 20      0.9    5.9 -4.2698822616e+00 -4.2698899996e+00
|Ax-b| =   4.9e-08, [Ay-c]_+ =   2.5E-10, |x|=  3.5e+01, |y|=  1.0e+02


Detailed timing (sec)
   Pre           IPM          Post
1.600E-02    2.030E-01    0.000E+00
Max-norms: ||b||=1.643809e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 39, ||L.L|| = 15033.

ans =

      yalmiptime: 0.0647
      solvertime: 0.2163
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
     solveroutput: [1x1 struct]


ans =

    4.2699

Iteration   3   Total error is: 0.0084251
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37139 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y        gap     delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            7.15E+03 0.000
  1 :   -1.25E+01 5.88E+03 0.000 0.8225 0.9000 0.9000   14.36  1  1  1.3E+00
  2 :   -1.02E+01 4.64E+03 0.000 0.7879 0.9000 0.9000   18.14  1  1  2.7E-01
  3 :   -1.39E+01 2.91E+03 0.000 0.6280 0.9000 0.9000    4.65  1  1  1.0E-01
  4 :   -1.43E+01 1.41E+03 0.000 0.4833 0.9000 0.9000    2.73  1  1  4.0E-02
```

```
   5 :   -1.68E+01 3.18E+02 0.000 0.2262 0.9000 0.9000    1.83  1  1  1.6E-02
   6 :   -1.44E+01 1.07E+02 0.000 0.3375 0.9000 0.9000    1.32  1  1  1.2E-02
   7 :   -1.18E+01 7.01E+01 0.000 0.6522 0.9000 0.9000    1.15  1  1  1.2E-02
   8 :   -6.47E+00 3.83E+01 0.000 0.5471 0.9000 0.9000    1.07  1  1  1.2E-02
   9 :   -4.81E+00 1.74E+01 0.000 0.4536 0.9000 0.9000    1.04  1  1  1.2E-02
  10 :   -3.79E+00 9.59E+00 0.000 0.5518 0.9000 0.9000    1.00  1  1  1.4E-02
  11 :   -3.51E+00 3.71E+00 0.000 0.3863 0.9000 0.9000    1.00  1  1  1.4E-02
  12 :   -3.34E+00 1.72E+00 0.000 0.4650 0.9000 0.9000    0.99  1  1  6.9E-03
  13 :   -3.31E+00 4.73E-01 0.000 0.2744 0.9000 0.9000    1.00  2  2  1.9E-03
  14 :   -3.30E+00 1.37E-01 0.000 0.2907 0.9000 0.9000    1.00  1  2  5.6E-04
  15 :   -3.29E+00 3.77E-02 0.000 0.2739 0.9000 0.9000    1.00  1  2  1.5E-04
  16 :   -3.29E+00 1.48E-02 0.000 0.3922 0.9000 0.9000    1.00  2  2  6.0E-05
  17 :   -3.29E+00 6.46E-03 0.000 0.4375 0.9000 0.9000    1.00  2  2  2.6E-05
  18 :   -3.29E+00 2.62E-03 0.000 0.4046 0.9000 0.9000    1.00  6  6  1.1E-05
  19 :   -3.29E+00 9.89E-04 0.000 0.3780 0.9000 0.9000    1.00 11 12  4.0E-06
  20 :   -3.29E+00 3.78E-04 0.000 0.3828 0.9000 0.9000    1.00 15 16  1.6E-06
  21 :   -3.29E+00 1.98E-04 0.000 0.5225 0.9000 0.9000    1.00 20 22  8.1E-07
  22 :   -3.29E+00 9.35E-05 0.000 0.4727 0.9000 0.9000    1.00 29 34  3.8E-07
  23 :   -3.29E+00 3.73E-05 0.000 0.3993 0.9000 0.9000    1.00 51 50  1.5E-07
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.1    5.1 -3.2857510864e+00 -3.2858020783e+00
|Ax-b| =   2.7e-07, [Ay-c]_+ =   0.0E+00, |x|=  3.5e+01, |y|=  1.0e+02


Detailed timing (sec)
   Pre          IPM          Post
1.600E-02    2.800E-01    0.000E+00
Max-norms: ||b||=2.578109e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 16, ||L.L|| = 1895.72.
```

ans =

```
    yalmiptime: 0.0596
    solvertime: 0.2984
          info: 'Numerical problems (SeDuMi-1.3)'
       problem: 4
   solveroutput: [1x1 struct]
```

ans =

```
    3.2858
```

```
Iteration   4   Total error is: 0.007386
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37139 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*  feas cg cg  prec
  0 :           7.20E+03 0.000
  1 :   -1.34E+01 5.93E+03 0.000 0.8231 0.9000 0.9000   14.37  1  1  1.3E+00
  2 :   -1.07E+01 4.66E+03 0.000 0.7862 0.9000 0.9000   18.22  1  1  2.7E-01
  3 :   -1.35E+01 2.95E+03 0.000 0.6326 0.9000 0.9000    4.65  1  1  1.0E-01
  4 :   -1.41E+01 1.62E+03 0.000 0.5495 0.9000 0.9000    2.72  1  1  4.6E-02
```

```
 5 :   -1.64E+01 4.73E+02 0.000 0.2918 0.9000 0.9000    1.92  1  1  1.8E-02
 6 :   -1.46E+01 1.27E+02 0.000 0.2675 0.9000 0.9000    1.38  1  1  1.3E-02
 7 :   -1.15E+01 7.78E+01 0.000 0.6146 0.9000 0.9000    1.17  1  1  1.2E-02
 8 :   -6.63E+00 4.59E+01 0.000 0.5900 0.9000 0.9000    1.09  1  1  1.1E-02
 9 :   -4.81E+00 2.27E+01 0.000 0.4942 0.9000 0.9000    1.05  1  1  1.2E-02
10 :   -3.61E+00 1.36E+01 0.000 0.6016 0.9000 0.9000    1.01  1  1  1.2E-02
11 :   -3.24E+00 5.91E+00 0.000 0.4332 0.9000 0.9000    1.01  1  1  1.6E-02
12 :   -2.93E+00 3.12E+00 0.000 0.5278 0.9000 0.9000    0.99  1  1  1.4E-02
13 :   -2.88E+00 9.37E-01 0.000 0.3005 0.9000 0.9000    1.00  1  1  4.4E-03
14 :   -2.85E+00 3.01E-01 0.000 0.3207 0.9000 0.9000    1.00  1  2  1.4E-03
15 :   -2.84E+00 7.03E-02 0.000 0.2338 0.9000 0.9000    1.00  1  2  3.3E-04
16 :   -2.84E+00 2.11E-02 0.000 0.2996 0.9000 0.9000    1.00  2  2  1.0E-04
17 :   -2.83E+00 7.95E-03 0.000 0.3778 0.9000 0.9000    1.00  2  2  3.8E-05
18 :   -2.83E+00 3.20E-03 0.000 0.4027 0.9000 0.9000    1.00  4  4  1.5E-05
19 :   -2.83E+00 1.32E-03 0.000 0.4126 0.9000 0.9000    1.00  8  8  6.3E-06
20 :   -2.83E+00 5.31E-04 0.000 0.4020 0.9000 0.9000    1.00 17 16  2.5E-06
21 :   -2.83E+00 2.20E-04 0.000 0.4141 0.9000 0.9000    1.00 28 24  1.0E-06
22 :   -2.83E+00 8.51E-05 0.000 0.3869 0.9000 0.9000    1.00 51 46  4.0E-07
Run into numerical problems.

iter seconds digits       c*x               b*y
 22      1.1   4.7 -2.8340440294e+00 -2.8341603888e+00
|Ax-b| =   8.3e-07, [Ay-c]_+ =   3.8E-10, |x|=  3.5e+01, |y|=  1.0e+02

Detailed timing (sec)
   Pre          IPM          Post
1.600E-02    2.490E-01    0.000E+00
Max-norms: ||b||=2.596198e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 17, ||L.L|| = 2753.49.

ans =

      yalmiptime: 0.0448
      solvertime: 0.2672
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
     solveroutput: [1x1 struct]


ans =

    2.8342

Iteration   5   Total error is: 0.0068555
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37139 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y        gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            7.21E+03 0.000
  1 :   -1.35E+01 5.93E+03 0.000 0.8230 0.9000 0.9000   14.37  1  1  1.3E+00
  2 :   -1.08E+01 4.66E+03 0.000 0.7864 0.9000 0.9000   18.20  1  1  2.7E-01
  3 :   -1.36E+01 2.96E+03 0.000 0.6339 0.9000 0.9000    4.65  1  1  1.0E-01
  4 :   -1.41E+01 1.64E+03 0.000 0.5535 0.9000 0.9000    2.72  1  1  4.6E-02
  5 :   -1.65E+01 4.80E+02 0.000 0.2934 0.9000 0.9000    1.93  1  1  1.9E-02
```

```
 6 :  -1.46E+01 1.27E+02 0.000 0.2642 0.9000 0.9000    1.38  1  1  1.3E-02
 7 :  -1.14E+01 7.74E+01 0.000 0.6106 0.9000 0.9000    1.17  1  1  1.2E-02
 8 :  -6.58E+00 4.57E+01 0.000 0.5904 0.9000 0.9000    1.08  1  1  1.1E-02
 9 :  -4.74E+00 2.26E+01 0.000 0.4936 0.9000 0.9000    1.05  1  1  1.2E-02
10 :  -3.53E+00 1.36E+01 0.000 0.6005 0.9000 0.9000    1.01  1  1  1.2E-02
11 :  -3.16E+00 5.89E+00 0.000 0.4349 0.9000 0.9000    1.01  1  1  1.6E-02
12 :  -2.84E+00 3.11E+00 0.000 0.5283 0.9000 0.9000    0.99  1  1  1.5E-02
13 :  -2.78E+00 9.57E-01 0.000 0.3071 0.9000 0.9000    1.00  1  1  4.6E-03
14 :  -2.75E+00 3.16E-01 0.000 0.3305 0.9000 0.9000    1.00  1  2  1.5E-03
15 :  -2.74E+00 7.35E-02 0.000 0.2325 0.9000 0.9000    1.00  1  2  3.6E-04
16 :  -2.74E+00 2.22E-02 0.000 0.3026 0.9000 0.9000    1.00  2  2  1.1E-04
17 :  -2.74E+00 7.47E-03 0.000 0.3359 0.9000 0.9000    1.00  2  2  3.7E-05
18 :  -2.74E+00 2.86E-03 0.000 0.3821 0.9000 0.9000    1.00  5  5  1.4E-05
19 :  -2.74E+00 7.61E-04 0.000 0.2667 0.9000 0.9000    1.00  8  8  3.8E-06
20 :  -2.74E+00 1.42E-04 0.000 0.1863 0.9000 0.9000    1.00 16 17  7.0E-07
21 :  -2.74E+00 3.28E-05 0.000 0.2315 0.9000 0.9000    1.00 38 35  1.6E-07
Run into numerical problems.

iter seconds digits       c*x               b*y
 21      0.8    5.1 -2.7360971373e+00 -2.7361420365e+00
|Ax-b| =   2.7e-07, [Ay-c]_+ =   6.9E-12, |x|=  3.5e+01, |y|=  1.0e+02


Detailed timing (sec)
   Pre           IPM          Post
3.100E-02    2.030E-01     0.000E+00
Max-norms: ||b||=2.597404e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 23, ||L.L|| = 2949.2.


ans =

     yalmiptime: 0.0616
     solvertime: 0.2354
           info: 'Numerical problems (SeDuMi-1.3)'
        problem: 4
   solveroutput: [1x1 struct]


ans =

   2.7361


Iteration   6   Total error is: 0.0067351
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37140 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :      b*y        gap    delta  rate   t/tP*  t/tD*  feas cg cg  prec
  0 :            7.20E+03 0.000
  1 :  -1.05E+01 5.91E+03 0.000 0.8203 0.9000 0.9000   14.32  1  1  1.2E+00
  2 :  -8.69E+00 4.68E+03 0.000 0.7917 0.9000 0.9000   17.79  1  1  2.8E-01
  3 :  -1.39E+01 3.06E+03 0.000 0.6538 0.9000 0.9000    4.65  1  1  1.1E-01
  4 :  -1.45E+01 1.32E+03 0.000 0.4314 0.9000 0.9000    2.87  1  1  3.8E-02
  5 :  -1.70E+01 1.27E+02 0.000 0.0962 0.9900 0.9900    1.78  1  1  1.4E-02
  6 :  -1.26E+01 7.07E+01 0.000 0.5570 0.9000 0.9000    1.29  1  1  1.2E-02
  7 :  -7.59E+00 4.25E+01 0.000 0.6015 0.9000 0.9000    1.14  1  1  1.2E-02
```

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 8 :   -5.23E+00 2.29E+01 0.000 0.5391 0.9000 0.9000    1.07  1  1  1.2E-02
 9 :   -3.89E+00 1.38E+01 0.000 0.6024 0.9000 0.9000    1.03  1  1  1.2E-02
10 :   -3.22E+00 7.56E+00 0.000 0.5473 0.9000 0.9000    1.01  1  1  1.4E-02
11 :   -2.87E+00 4.36E+00 0.000 0.5765 0.9000 0.9000    1.00  1  1  1.9E-02
12 :   -2.72E+00 2.19E+00 0.000 0.5039 0.9000 0.9000    1.00  1  1  1.1E-02
13 :   -2.65E+00 1.18E+00 0.000 0.5390 0.9000 0.9000    1.00  1  2  6.0E-03
14 :   -2.62E+00 4.95E-01 0.000 0.4188 0.9000 0.9000    1.00  2  2  2.6E-03
15 :   -2.60E+00 2.55E-01 0.000 0.5149 0.9000 0.9000    1.00  2  2  1.3E-03
16 :   -2.60E+00 1.02E-01 0.000 0.4014 0.9000 0.9000    1.00  2  2  5.3E-04
17 :   -2.59E+00 4.46E-02 0.000 0.4350 0.9000 0.9000    1.00  2  2  2.3E-04
18 :   -2.59E+00 1.88E-02 0.000 0.4217 0.9000 0.9000    1.00  2  2  9.8E-05
19 :   -2.58E+00 7.15E-03 0.000 0.3808 0.9000 0.9000    1.00  2  2  3.7E-05
20 :   -2.58E+00 2.63E-03 0.000 0.3679 0.9000 0.9000    1.00  5  5  1.4E-05
21 :   -2.58E+00 7.17E-04 0.000 0.2723 0.9000 0.9000    1.00  8  8  3.8E-06
22 :   -2.58E+00 2.04E-04 0.000 0.2852 0.9000 0.9000    1.00 14 13  1.1E-06
23 :   -2.58E+00 6.68E-05 0.000 0.3270 0.9000 0.9000    1.00 33 43  3.5E-07
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.0   4.8  -2.5838866396e+00 -2.5839781712e+00
|Ax-b| =   5.5e-07, [Ay-c]_+ =   1.7E-09, |x|=  3.6e+01, |y|=  1.0e+02


Detailed timing (sec)
   Pre          IPM          Post
1.501E-02    2.500E-01    0.000E+00
Max-norms: ||b||=2.594261e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 19, ||L.L|| = 3081.38.


ans =

      yalmiptime: 0.0599
      solvertime: 0.2681
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]



ans =

    2.5840


Iteration   7   Total error is: 0.0065428
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
eqs m = 85, order n = 1003, dim = 1087, blocks = 2
nnz(A) = 37139 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :      b*y        gap    delta  rate   t/tP*   t/tD*   feas cg cg   prec
  0 :            7.06E+03 0.000
  1 :   -3.88E-01 5.73E+03 0.000 0.8116 0.9000 0.9000   14.17  1  1  1.2E+00
  2 :   -1.03E-01 4.68E+03 0.000 0.8169 0.9000 0.9000   16.58  1  1  3.2E-01
  3 :   -7.87E+00 3.62E+03 0.000 0.7737 0.9000 0.9000    4.90  1  1  1.7E-01
  4 :   -1.52E+01 1.69E+03 0.000 0.4651 0.9000 0.9000    3.84  1  1  5.0E-02
  5 :   -1.86E+01 1.24E+02 0.000 0.0738 0.9900 0.9900    2.00  1  1  1.4E-02
  6 :   -1.26E+01 4.61E+01 0.000 0.3708 0.9000 0.9000    1.33  1  1  1.3E-02
  7 :   -8.60E+00 2.84E+01 0.000 0.6162 0.9000 0.9000    1.11  1  1  1.3E-02
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  8 :  -3.40E+00 1.55E+01 0.000 0.5439 0.9000 0.9000   1.04  1  1  1.2E-02
  9 :  -2.06E+00 6.00E+00 0.000 0.3882 0.9000 0.9000   1.02  1  1  1.3E-02
 10 :  -1.56E+00 2.89E+00 0.000 0.4822 0.9000 0.9000   1.00  1  1  1.6E-02
 11 :  -1.42E+00 1.10E+00 0.000 0.3799 0.9000 0.9000   1.00  1  1  1.0E-02
 12 :  -1.37E+00 5.02E-01 0.000 0.4564 0.9000 0.9000   1.00  1  1  5.0E-03
 13 :  -1.35E+00 1.82E-01 0.000 0.3627 0.9000 0.9000   1.00  1  1  1.8E-03
 14 :  -1.34E+00 8.31E-02 0.000 0.4567 0.9000 0.9000   1.00  1  2  8.5E-04
 15 :  -1.33E+00 3.99E-02 0.000 0.4805 0.9000 0.9000   1.00  2  2  4.1E-04
 16 :  -1.33E+00 1.80E-02 0.000 0.4518 0.9000 0.9000   1.00  2  2  1.8E-04
 17 :  -1.33E+00 8.42E-03 0.000 0.4666 0.9000 0.9000   1.00  2  2  8.6E-05
 18 :  -1.33E+00 2.77E-03 0.000 0.3293 0.9000 0.9000   1.00  2  2  2.8E-05
 19 :  -1.33E+00 9.19E-04 0.000 0.3313 0.9000 0.9000   1.00  5  6  9.4E-06
 20 :  -1.33E+00 4.50E-04 0.000 0.4897 0.9000 0.9000   1.00 10 11  4.6E-06
 21 :  -1.33E+00 1.58E-04 0.000 0.3502 0.9000 0.9000   1.00 13 14  1.6E-06
 22 :  -1.33E+00 7.68E-05 0.000 0.4878 0.9000 0.9000   1.00 30 26  7.9E-07
 23 :  -1.33E+00 3.08E-05 0.000 0.4005 0.9000 0.9000   1.00 40 50  3.2E-07
Run into numerical problems.

iter seconds digits       c*x              b*y
 23      1.1   5.0 -1.3294428959e+00 -1.3294852443e+00
|Ax-b| =   2.6e-07, [Ay-c]_+ =   0.0E+00, |x|=  3.7e+01, |y|=  1.0e+02


Detailed timing (sec)
   Pre          IPM          Post
1.501E-02    2.810E-01    0.000E+00
Max-norms: ||b||=2.545631e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 20, ||L.L|| = 2949.96.


ans =

      yalmiptime: 0.0487
      solvertime: 0.2943
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]



ans =

    1.3295


Iteration   8   Total error is: 0.0046731
The total representation error of the testing signals is: 0.037919
>>
```