```
>> 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
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21616 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            1.03E+03 0.000
  1 :  -1.09E+01 8.60E+02 0.000 0.8350 0.9000 0.9000  14.46  1  1  1.3E+00
  2 :  -1.36E+01 6.81E+02 0.000 0.7914 0.9000 0.9000  21.32  1  1  2.5E-01
  3 :  -1.94E+01 4.04E+02 0.000 0.5937 0.9000 0.9000   4.54  1  1  8.9E-02
  4 :  -2.20E+01 2.54E+02 0.000 0.6292 0.9000 0.9000   2.38  1  1  5.1E-02
  5 :  -2.32E+01 1.84E+02 0.000 0.7238 0.9000 0.9000   1.62  2  2  4.0E-02
  6 :  -2.61E+01 7.83E+01 0.000 0.4254 0.9000 0.9000   1.41  2  2  2.6E-02
  7 :  -2.71E+01 4.20E+01 0.000 0.5360 0.9000 0.9000   1.21  2  2  2.8E-02
  8 :  -2.73E+01 2.98E+01 0.000 0.7102 0.9000 0.9000   1.09  2  2  2.5E-02
  9 :  -2.74E+01 2.44E+01 0.000 0.8199 0.9000 0.9000   0.94  2  2  2.2E-02
 10 :  -2.76E+01 1.99E+01 0.025 0.8131 0.9000 0.9000   0.80  2  2  1.9E-02
 11 :  -2.79E+01 1.65E+01 0.000 0.8324 0.9000 0.9000   0.40  2  2  1.8E-02
 12 :  -2.96E+01 9.61E+00 0.000 0.5811 0.9000 0.9000   0.72  3  3  1.0E-02
 13 :  -3.11E+01 5.85E+00 0.000 0.6084 0.9000 0.9000   0.68  2  2  7.2E-03
 14 :  -3.33E+01 2.03E+00 0.000 0.3473 0.9000 0.9000   0.96  2  2  2.3E-03
 15 :  -3.38E+01 1.31E+00 0.000 0.6475 0.9000 0.9000   0.98  2  2  1.5E-03
 16 :  -3.40E+01 9.89E-01 0.000 0.7518 0.9000 0.9000   0.85  3  3  1.2E-03
 17 :  -3.43E+01 6.09E-01 0.000 0.6160 0.9000 0.9000   0.75  3  3  8.8E-04
 18 :  -3.45E+01 4.65E-01 0.000 0.7634 0.9000 0.9000   0.55  3  3  8.3E-04
 19 :  -3.46E+01 3.53E-01 0.000 0.7603 0.9000 0.9000   0.29  3  3  8.8E-04
 20 :  -3.48E+01 2.25E-01 0.000 0.6371 0.9000 0.9000  -0.03  3  3  1.1E-03
 21 :  -3.52E+01 1.56E-01 0.000 0.6924 0.9000 0.9000  -0.03  4  4  1.2E-03
 22 :  -3.55E+01 9.43E-02 0.000 0.6045 0.9000 0.9000  -0.24  4  4  1.5E-03
 23 :  -3.68E+01 5.41E-02 0.000 0.5736 0.9000 0.9000   0.14  4  4  1.1E-03
 24 :  -3.75E+01 2.91E-02 0.000 0.5391 0.9000 0.9000  -0.00  4  4  1.2E-03
 25 :  -3.95E+01 9.31E-03 0.000 0.3195 0.9000 0.9000   0.62 22 19  3.9E-04
 26 :  -4.00E+01 4.94E-03 0.000 0.5299 0.9000 0.9000   0.72 50 45  2.4E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 26      1.2   2.7 -3.9968053147e+01 -4.0040200174e+01
|Ax-b| =   6.2e-04, [Ay-c]_+ =   3.4E-05, |x|=  2.6e+04, |y|=  6.3e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
6.200E-02    3.280E-01    3.100E-02
Max-norms: ||b||=3.032919e+02, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 19, ||L.L|| = 16440.3.

ans =

      yalmiptime: 0.3984
      solvertime: 0.4446
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
```

```
    solveroutput: [1x1 struct]


ans =

   39.9818

SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21613 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            2.32E+03 0.000
  1 :  -3.11E+01 1.92E+03 0.000 0.8280 0.9000 0.9000  14.35  1  1  1.3E+00
  2 :  -3.41E+01 1.46E+03 0.000 0.7604 0.9000 0.9000  19.29  1  1  2.4E-01
  3 :  -3.48E+01 9.93E+02 0.000 0.6788 0.9000 0.9000   4.11  1  1  1.1E-01
  4 :  -3.73E+01 4.49E+02 0.000 0.4522 0.9000 0.9000   2.58  1  1  4.3E-02
  5 :  -3.44E+01 2.62E+02 0.000 0.5832 0.9000 0.9000   1.56  2  2  3.0E-02
  6 :  -3.30E+01 1.24E+02 0.000 0.4727 0.9000 0.9000   1.31  2  2  2.3E-02
  7 :  -3.25E+01 5.48E+01 0.000 0.4427 0.9000 0.9000   1.18  2  2  2.5E-02
  8 :  -3.13E+01 3.46E+01 0.000 0.6306 0.9000 0.9000   1.09  2  2  2.3E-02
  9 :  -3.01E+01 2.57E+01 0.000 0.7445 0.9000 0.9000   0.97  2  2  1.9E-02
 10 :  -2.87E+01 1.59E+01 0.000 0.6195 0.9000 0.9000   0.97  3  2  1.2E-02
 11 :  -2.84E+01 9.31E+00 0.000 0.5843 0.9000 0.9000   0.97  2  2  7.4E-03
 12 :  -2.79E+01 3.83E+00 0.000 0.4116 0.9000 0.9000   1.02  3  3  3.0E-03
 13 :  -2.79E+01 1.64E+00 0.000 0.4282 0.9000 0.9000   1.04  3  3  1.2E-03
 14 :  -2.78E+01 8.35E-01 0.000 0.5088 0.9000 0.9000   1.04  3  3  6.3E-04
 15 :  -2.78E+01 6.26E-01 0.000 0.7498 0.9000 0.9000   0.97  3  3  4.9E-04
 16 :  -2.78E+01 4.66E-01 0.000 0.7448 0.9000 0.9000   0.88  3  3  4.0E-04
 17 :  -2.78E+01 3.48E-01 0.000 0.7453 0.9000 0.9000   0.40  4  4  4.2E-04
 18 :  -2.78E+01 2.54E-01 0.000 0.7311 0.9000 0.9000  -0.02  3  3  4.8E-04
 19 :  -2.78E+01 1.75E-01 0.000 0.6906 0.9000 0.9000   0.18  5  5  4.1E-04
 20 :  -2.79E+01 1.10E-01 0.000 0.6290 0.9000 0.9000  -0.07  5  5  4.9E-04
 21 :  -2.81E+01 5.98E-02 0.000 0.5417 0.9000 0.9000   0.26 16 17  3.4E-04
 22 :  -2.82E+01 3.07E-02 0.000 0.5131 0.9000 0.9000   0.06 15 16  3.7E-04
 23 :  -2.84E+01 2.02E-02 0.000 0.6599 0.9000 0.9000   0.39 49 51  3.0E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.0   2.3 -2.8248449896e+01 -2.8386143805e+01
|Ax-b| =   1.1e-03, [Ay-c]_+ =   2.8E-05, |x|=  2.3e+04, |y|=  7.5e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
1.600E-02    2.340E-01    0.000E+00
Max-norms: ||b||=6.852278e+02, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 16, ||L.L|| = 18044.5.

ans =

      yalmiptime: 0.0554
      solvertime: 0.2566
            info: 'Numerical problems (SeDuMi-1.3)'
```

```
         problem: 4
    solveroutput: [1x1 struct]


ans =

   28.3507

Iteration   2   Total error is: 0.021583
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21612 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            2.92E+03 0.000
  1 :  -3.19E+01 2.42E+03 0.000 0.8285 0.9000 0.9000  14.36  1  1  1.3E+00
  2 :  -3.44E+01 1.84E+03 0.000 0.7615 0.9000 0.9000  19.37  1  1  2.4E-01
  3 :  -3.38E+01 1.26E+03 0.000 0.6856 0.9000 0.9000   4.13  1  1  1.1E-01
  4 :  -3.65E+01 5.73E+02 0.000 0.4544 0.9000 0.9000   2.60  1  1  4.3E-02
  5 :  -3.26E+01 3.25E+02 0.000 0.5672 0.9000 0.9000   1.57  2  2  3.0E-02
  6 :  -3.06E+01 1.35E+02 0.000 0.4153 0.9000 0.9000   1.29  2  2  2.1E-02
  7 :  -3.00E+01 6.77E+01 0.000 0.5012 0.9000 0.9000   1.16  2  2  2.2E-02
  8 :  -2.91E+01 4.63E+01 0.000 0.6847 0.9000 0.9000   1.08  2  2  2.5E-02
  9 :  -2.80E+01 3.59E+01 0.000 0.7752 0.9000 0.9000   0.95  2  2  2.8E-02
 10 :  -2.62E+01 2.13E+01 0.000 0.5939 0.9000 0.9000   0.94  3  2  1.8E-02
 11 :  -2.58E+01 1.13E+01 0.000 0.5318 0.9000 0.9000   0.96  2  2  1.0E-02
 12 :  -2.52E+01 4.35E+00 0.000 0.3833 0.9000 0.9000   1.03  3  3  3.8E-03
 13 :  -2.50E+01 1.77E+00 0.000 0.4072 0.9000 0.9000   1.05  3  3  1.5E-03
 14 :  -2.49E+01 9.85E-01 0.000 0.5560 0.9000 0.9000   1.02  3  3  8.4E-04
 15 :  -2.49E+01 7.66E-01 0.000 0.7775 0.9000 0.9000   0.89  3  3  7.1E-04
 16 :  -2.49E+01 5.62E-01 0.000 0.7339 0.9000 0.9000   0.77  3  3  6.0E-04
 17 :  -2.49E+01 4.20E-01 0.000 0.7467 0.9000 0.9000   0.16  4  4  6.8E-04
 18 :  -2.49E+01 2.68E-01 0.000 0.6385 0.9000 0.9000   0.05  5  5  7.1E-04
 19 :  -2.50E+01 1.68E-01 0.000 0.6275 0.9000 0.9000   0.01  7  8  7.1E-04
 20 :  -2.52E+01 1.03E-01 0.000 0.6133 0.9000 0.9000   0.15 23 20  6.3E-04
 21 :  -2.53E+01 6.67E-02 0.000 0.6476 0.9000 0.9000  -0.02 20 25  7.1E-04
 22 :  -2.56E+01 4.09E-02 0.000 0.6125 0.9000 0.9000   0.39 47 45  5.1E-04
 23 :  -2.58E+01 2.66E-02 0.000 0.6511 0.9000 0.9000   0.29 50 51  4.7E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.1   2.1 -2.5653611206e+01 -2.5842678272e+01
|Ax-b| =   1.5e-03, [Ay-c]_+ =   3.1E-05, |x|=  3.0e+04, |y|=  7.7e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
0.000E+00    2.650E-01    0.000E+00
Max-norms: ||b||=8.606538e+02, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 16, ||L.L|| = 15544.6.

ans =

      yalmiptime: 0.0595
```

```
      solvertime: 0.2675
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   25.8009

Iteration   3   Total error is: 0.020534
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21610 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            3.19E+03 0.000
  1 :  -3.23E+01 2.64E+03 0.000 0.8289 0.9000 0.9000  14.37  1  1  1.3E+00
  2 :  -3.45E+01 2.01E+03 0.000 0.7620 0.9000 0.9000  19.44  1  1  2.4E-01
  3 :  -3.31E+01 1.39E+03 0.000 0.6915 0.9000 0.9000   4.14  1  1  1.1E-01
  4 :  -3.58E+01 6.38E+02 0.000 0.4582 0.9000 0.9000   2.61  1  1  4.4E-02
  5 :  -3.16E+01 3.61E+02 0.000 0.5668 0.9000 0.9000   1.58  2  2  3.0E-02
  6 :  -2.95E+01 1.49E+02 0.000 0.4112 0.9000 0.9000   1.30  2  2  2.1E-02
  7 :  -2.89E+01 7.54E+01 0.000 0.5075 0.9000 0.9000   1.16  2  2  2.1E-02
  8 :  -2.81E+01 5.26E+01 0.000 0.6975 0.9000 0.9000   1.08  2  2  2.3E-02
  9 :  -2.70E+01 4.10E+01 0.000 0.7795 0.9000 0.9000   0.94  2  2  2.6E-02
 10 :  -2.51E+01 2.43E+01 0.000 0.5928 0.9000 0.9000   0.93  3  2  2.1E-02
 11 :  -2.47E+01 1.27E+01 0.000 0.5225 0.9000 0.9000   0.96  2  2  1.2E-02
 12 :  -2.40E+01 4.84E+00 0.000 0.3811 0.9000 0.9000   1.03  3  3  4.4E-03
 13 :  -2.38E+01 1.97E+00 0.000 0.4065 0.9000 0.9000   1.05  3  3  1.7E-03
 14 :  -2.37E+01 1.12E+00 0.000 0.5671 0.9000 0.9000   1.01  3  3  1.0E-03
 15 :  -2.37E+01 8.64E-01 0.000 0.7746 0.9000 0.9000   0.86  4  4  8.6E-04
 16 :  -2.37E+01 6.31E-01 0.000 0.7296 0.9000 0.9000   0.73  4  4  7.5E-04
 17 :  -2.37E+01 4.69E-01 0.000 0.7437 0.9000 0.9000   0.13  4  4  8.3E-04
 18 :  -2.37E+01 3.11E-01 0.000 0.6625 0.9000 0.9000   0.06  4  4  8.6E-04
 19 :  -2.38E+01 2.06E-01 0.000 0.6645 0.9000 0.9000   0.12 15 14  8.1E-04
 20 :  -2.39E+01 1.36E-01 0.000 0.6571 0.9000 0.9000  -0.11  9  9  9.5E-04
 21 :  -2.43E+01 7.74E-02 0.000 0.5701 0.9000 0.9000   0.27 35 43  6.6E-04
 22 :  -2.45E+01 4.19E-02 0.000 0.5421 0.9000 0.9000   0.03 37 35  7.6E-04
 23 :  -2.48E+01 2.86E-02 0.000 0.6813 0.9000 0.9000   0.41 51 51  6.1E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.3   2.1 -2.4612137837e+01 -2.4830641074e+01
|Ax-b| =   1.7e-03, [Ay-c]_+ =   3.3E-05, |x|=  3.6e+04, |y|=  7.8e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
0.000E+00    3.120E-01    0.000E+00
Max-norms: ||b||=9.403387e+02, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 19, ||L.L|| = 16957.4.

ans =
```

```
      yalmiptime: 0.0585
      solvertime: 0.3155
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   24.7623

Iteration   4   Total error is: 0.020077
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21610 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            3.42E+03 0.000
  1 :  -3.25E+01 2.83E+03 0.000 0.8294 0.9000 0.9000  14.38  1  1  1.3E+00
  2 :  -3.45E+01 2.16E+03 0.000 0.7606 0.9000 0.9000  19.54  1  1  2.4E-01
  3 :  -3.22E+01 1.50E+03 0.000 0.6938 0.9000 0.9000   4.13  2  1  1.1E-01
  4 :  -3.49E+01 6.89E+02 0.000 0.4605 0.9000 0.9000   2.60  1  1  4.4E-02
  5 :  -3.06E+01 3.96E+02 0.000 0.5745 0.9000 0.9000   1.57  2  2  3.0E-02
  6 :  -2.82E+01 1.95E+02 0.000 0.4933 0.9000 0.9000   1.31  2  2  2.2E-02
  7 :  -2.80E+01 8.54E+01 0.000 0.4376 0.9000 0.9000   1.18  2  2  2.0E-02
  8 :  -2.71E+01 5.94E+01 0.000 0.6956 0.9000 0.9000   1.09  2  2  2.1E-02
  9 :  -2.60E+01 4.66E+01 0.000 0.7835 0.9000 0.9000   0.94  2  2  2.3E-02
 10 :  -2.42E+01 2.83E+01 0.000 0.6076 0.9000 0.9000   0.92  3  3  2.6E-02
 11 :  -2.38E+01 1.54E+01 0.000 0.5433 0.9000 0.9000   0.95  2  2  1.5E-02
 12 :  -2.32E+01 5.84E+00 0.000 0.3803 0.9000 0.9000   1.02  3  3  5.6E-03
 13 :  -2.30E+01 2.33E+00 0.000 0.3995 0.9000 0.9000   1.05  3  3  2.2E-03
 14 :  -2.28E+01 1.22E+00 0.000 0.5225 0.9000 0.9000   1.02  3  3  1.2E-03
 15 :  -2.28E+01 9.13E-01 0.000 0.7481 0.9000 0.9000   0.86  4  4  9.6E-04
 16 :  -2.28E+01 6.47E-01 0.000 0.7086 0.9000 0.9000   0.66  4  4  8.6E-04
 17 :  -2.27E+01 4.86E-01 0.000 0.7514 0.9000 0.9000   0.05  4  4  9.6E-04
 18 :  -2.28E+01 3.42E-01 0.000 0.7038 0.9000 0.9000   0.08  5  5  9.4E-04
 19 :  -2.29E+01 2.33E-01 0.000 0.6802 0.9000 0.9000  -0.15  5  5  1.1E-03
 20 :  -2.31E+01 1.51E-01 0.000 0.6475 0.9000 0.9000   0.18 22 23  8.6E-04
 21 :  -2.33E+01 8.78E-02 0.000 0.5829 0.9000 0.9000  -0.07 15 18  1.0E-03
 22 :  -2.37E+01 5.42E-02 0.000 0.6179 0.9000 0.9000   0.34 45 42  7.6E-04
 23 :  -2.40E+01 3.49E-02 0.000 0.6435 0.9000 0.9000   0.31 46 51  6.7E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.2   2.0 -2.3789353733e+01 -2.4038141837e+01
|Ax-b| =   2.0e-03, [Ay-c]_+ =   3.5E-05, |x|=  3.5e+04, |y|=  7.9e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
0.000E+00    2.970E-01    0.000E+00
Max-norms: ||b||=1.008629e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 18, ||L.L|| = 15755.2.
```

```
ans =

      yalmiptime: 0.0612
      solvertime: 0.2978
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   23.9673

Iteration   5   Total error is: 0.019724
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21612 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            3.71E+03 0.000
  1 :  -3.27E+01 3.07E+03 0.000 0.8287 0.9000 0.9000  14.36  1  1  1.3E+00
  2 :  -3.49E+01 2.33E+03 0.000 0.7577 0.9000 0.9000  19.37  1  1  2.4E-01
  3 :  -3.29E+01 1.61E+03 0.000 0.6898 0.9000 0.9000   4.08  1  1  1.1E-01
  4 :  -3.54E+01 7.46E+02 0.000 0.4644 0.9000 0.9000   2.58  1  1  4.4E-02
  5 :  -3.07E+01 4.24E+02 0.000 0.5684 0.9000 0.9000   1.57  2  2  3.0E-02
  6 :  -2.81E+01 2.07E+02 0.000 0.4873 0.9000 0.9000   1.31  2  2  2.2E-02
  7 :  -2.79E+01 9.29E+01 0.000 0.4493 0.9000 0.9000   1.18  2  2  2.0E-02
  8 :  -2.70E+01 6.53E+01 0.000 0.7029 0.9000 0.9000   1.09  2  2  2.0E-02
  9 :  -2.58E+01 5.09E+01 0.000 0.7798 0.9000 0.9000   0.95  2  2  2.2E-02
 10 :  -2.38E+01 3.06E+01 0.000 0.6005 0.9000 0.9000   0.92  3  3  2.8E-02
 11 :  -2.33E+01 1.65E+01 0.000 0.5400 0.9000 0.9000   0.95  2  2  1.6E-02
 12 :  -2.26E+01 6.29E+00 0.000 0.3808 0.9000 0.9000   1.03  3  3  6.2E-03
 13 :  -2.23E+01 2.54E+00 0.000 0.4040 0.9000 0.9000   1.05  3  3  2.4E-03
 14 :  -2.21E+01 1.32E+00 0.000 0.5207 0.9000 0.9000   1.02  3  3  1.3E-03
 15 :  -2.21E+01 9.94E-01 0.000 0.7517 0.9000 0.9000   0.86  3  4  1.1E-03
 16 :  -2.21E+01 7.09E-01 0.000 0.7132 0.9000 0.9000   0.66  3  3  9.7E-04
 17 :  -2.21E+01 5.37E-01 0.000 0.7570 0.9000 0.9000   0.05  4  4  1.1E-03
 18 :  -2.21E+01 3.84E-01 0.000 0.7159 0.9000 0.9000   0.10  5  5  1.0E-03
 19 :  -2.22E+01 2.61E-01 0.000 0.6781 0.9000 0.9000  -0.14  5  5  1.2E-03
 20 :  -2.25E+01 1.66E-01 0.000 0.6374 0.9000 0.9000   0.18 21 21  9.5E-04
 21 :  -2.27E+01 9.58E-02 0.000 0.5766 0.9000 0.9000  -0.06 21 17  1.1E-03
 22 :  -2.31E+01 5.96E-02 0.000 0.6222 0.9000 0.9000   0.34 42 48  8.5E-04
 23 :  -2.35E+01 3.85E-02 0.000 0.6455 0.9000 0.9000   0.32 51 51  7.4E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 23      1.1   1.9 -2.3194776652e+01 -2.3465775598e+01
|Ax-b| =   2.1e-03, [Ay-c]_+ =   3.5E-05, |x|=  3.8e+04, |y|=  7.9e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
1.600E-02    2.800E-01    0.000E+00
```

```
Max-norms: ||b||=1.095221e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 18, ||L.L|| = 16169.1.

ans =

      yalmiptime: 0.0662
      solvertime: 0.2918
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   23.3879

Iteration   6   Total error is: 0.019461
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21612 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            4.11E+03 0.000
  1 :  -3.27E+01 3.39E+03 0.000 0.8256 0.9000 0.9000  14.31  1  1  1.3E+00
  2 :  -3.55E+01 2.57E+03 0.000 0.7593 0.9000 0.9000  18.69  1  1  2.4E-01
  3 :  -3.58E+01 1.79E+03 0.000 0.6945 0.9000 0.9000   4.11  1  1  1.2E-01
  4 :  -3.81E+01 8.74E+02 0.000 0.4890 0.9000 0.9000   2.64  1  1  4.7E-02
  5 :  -3.47E+01 5.74E+02 0.000 0.6562 0.9000 0.9000   1.67  2  1  3.4E-02
  6 :  -3.18E+01 3.25E+02 0.000 0.5666 0.9000 0.9000   1.35  2  2  2.5E-02
  7 :  -2.95E+01 1.34E+02 0.000 0.4135 0.9000 0.9000   1.26  2  2  2.0E-02
  8 :  -2.80E+01 7.04E+01 0.000 0.5242 0.9000 0.9000   1.12  2  2  2.0E-02
  9 :  -2.54E+01 4.68E+01 0.000 0.6649 0.9000 0.9000   0.98  2  2  2.3E-02
 10 :  -2.37E+01 3.12E+01 0.000 0.6658 0.9000 0.9000   0.95  2  2  2.8E-02
 11 :  -2.33E+01 2.01E+01 0.000 0.6452 0.9000 0.9000   0.95  2  2  2.0E-02
 12 :  -2.24E+01 9.26E+00 0.000 0.4604 0.9000 0.9000   1.02  2  2  9.3E-03
 13 :  -2.21E+01 3.94E+00 0.000 0.4256 0.9000 0.9000   1.04  2  2  3.9E-03
 14 :  -2.18E+01 1.86E+00 0.000 0.4725 0.9000 0.9000   1.04  3  3  1.8E-03
 15 :  -2.17E+01 1.24E+00 0.000 0.6649 0.9000 0.9000   0.96  3  4  1.3E-03
 16 :  -2.17E+01 1.01E+00 0.000 0.8123 0.9000 0.9000   0.72  4  4  1.2E-03
 17 :  -2.17E+01 7.49E-01 0.000 0.7447 0.9000 0.9000   0.58  4  3  1.1E-03
 18 :  -2.17E+01 5.46E-01 0.000 0.7295 0.9000 0.9000  -0.01  5  4  1.2E-03
 19 :  -2.18E+01 3.68E-01 0.000 0.6729 0.9000 0.9000   0.06 10 10  1.2E-03
 20 :  -2.19E+01 2.46E-01 0.000 0.6692 0.9000 0.9000  -0.13 10  9  1.4E-03
 21 :  -2.23E+01 1.49E-01 0.000 0.6060 0.9000 0.9000   0.25 27 33  9.9E-04
 22 :  -2.25E+01 8.46E-02 0.000 0.5677 0.9000 0.9000  -0.01 19 23  1.2E-03
 23 :  -2.29E+01 6.15E-02 0.000 0.7265 0.9000 0.9000   0.39 51 51  9.7E-04
 24 :  -2.32E+01 4.00E-02 0.000 0.6505 0.9000 0.9000   0.41 51 51  8.1E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 24      1.2   1.9 -2.2937293509e+01 -2.3225724778e+01
|Ax-b| =   2.2e-03, [Ay-c]_+ =   3.3E-05, |x|=  4.2e+04, |y|=  8.0e+01
No sensible solution found.
```

```
Detailed timing (sec)
   Pre          IPM          Post
0.000E+00    3.120E-01    0.000E+00
Max-norms: ||b||=1.211928e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 19, ||L.L|| = 24494.9.

ans =

      yalmiptime: 0.0646
      solvertime: 0.3254
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   23.1304

Iteration   7   Total error is: 0.019333
SeDuMi 1.32 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.
Alg = 2: xz-corrector, theta = 0.250, beta = 0.500
Put 15 free variables in a quadratic cone
eqs m = 85, order n = 805, dim = 903, blocks = 3
nnz(A) = 21612 + 0, nnz(ADA) = 7225, nnz(L) = 3655
 it :     b*y       gap    delta  rate   t/tP*  t/tD*   feas cg cg  prec
  0 :            4.39E+03 0.000
  1 :  -3.29E+01 3.62E+03 0.000 0.8251 0.9000 0.9000  14.30  1  1  1.3E+00
  2 :  -3.57E+01 2.75E+03 0.000 0.7590 0.9000 0.9000  18.58  1  1  2.4E-01
  3 :  -3.61E+01 1.91E+03 0.000 0.6952 0.9000 0.9000   4.11  1  1  1.2E-01
  4 :  -3.83E+01 9.43E+02 0.000 0.4936 0.9000 0.9000   2.65  1  1  4.8E-02
  5 :  -3.49E+01 6.24E+02 0.000 0.6618 0.9000 0.9000   1.68  2  2  3.4E-02
  6 :  -3.21E+01 3.70E+02 0.000 0.5923 0.9000 0.9000   1.35  2  2  2.6E-02
  7 :  -2.97E+01 1.58E+02 0.000 0.4278 0.9000 0.9000   1.27  2  2  2.0E-02
  8 :  -2.83E+01 8.10E+01 0.000 0.5120 0.9000 0.9000   1.13  2  2  2.0E-02
  9 :  -2.63E+01 5.93E+01 0.000 0.7323 0.9000 0.9000   0.98  2  2  2.1E-02
 10 :  -2.39E+01 3.75E+01 0.000 0.6319 0.9000 0.9000   0.95  3  2  2.5E-02
 11 :  -2.33E+01 2.21E+01 0.000 0.5905 0.9000 0.9000   0.96  2  2  2.2E-02
 12 :  -2.22E+01 9.50E+00 0.000 0.4293 0.9000 0.9000   1.02  3  3  9.6E-03
 13 :  -2.19E+01 3.90E+00 0.000 0.4101 0.9000 0.9000   1.04  3  3  3.8E-03
 14 :  -2.15E+01 1.83E+00 0.000 0.4690 0.9000 0.9000   1.04  3  3  1.8E-03
 15 :  -2.15E+01 1.24E+00 0.000 0.6784 0.9000 0.9000   0.93  3  3  1.3E-03
 16 :  -2.14E+01 9.38E-01 0.000 0.7566 0.9000 0.9000   0.69  4  4  1.2E-03
 17 :  -2.14E+01 6.56E-01 0.000 0.6999 0.9000 0.9000   0.39  3  3  1.2E-03
 18 :  -2.15E+01 4.97E-01 0.000 0.7570 0.9000 0.9000   0.08  5  5  1.2E-03
 19 :  -2.15E+01 3.40E-01 0.000 0.6839 0.9000 0.9000  -0.12  4  4  1.5E-03
 20 :  -2.19E+01 2.16E-01 0.000 0.6359 0.9000 0.9000   0.19 24 19  1.1E-03
 21 :  -2.21E+01 1.25E-01 0.000 0.5785 0.9000 0.9000  -0.05 20 20  1.3E-03
 22 :  -2.26E+01 7.66E-02 0.000 0.6125 0.9000 0.9000   0.36 49 45  9.6E-04
 23 :  -2.29E+01 5.36E-02 0.000 0.7003 0.9000 0.9000   0.34 51 51  8.6E-04
 24 :  -2.32E+01 3.27E-02 0.000 0.6091 0.9000 0.9000   0.34 51 51  8.0E-04
Run into numerical problems.

iter seconds digits       c*x               b*y
 24      1.4   2.0 -2.2952441189e+01 -2.3211747083e+01
```

```
|Ax-b| =   2.1e-03, [Ay-c]_+ =   2.8E-05, |x|=  4.8e+04, |y|=  8.0e+01
No sensible solution found.

Detailed timing (sec)
   Pre          IPM          Post
0.000E+00    3.280E-01    0.000E+00
Max-norms: ||b||=1.295953e+03, ||c|| = 5.256842e+01,
Cholesky |add|=0, |skip| = 19, ||L.L|| = 35144.5.

ans =

      yalmiptime: 0.0542
      solvertime: 0.3358
            info: 'Numerical problems (SeDuMi-1.3)'
         problem: 4
    solveroutput: [1x1 struct]


ans =

   23.1343

Iteration   8   Total error is: 0.019306
The total representation error of the testing signals is: 0.19173
>>
```