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>> demo_Polynomial_Dictionary_Learning
Starting to train the dictionary
solving the quadratic problem with YALMIP...
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```
num. of constraints = 25
dim. of socp var = 26, num. of socp blk = 1
dim. of linear var = 800
*****
```

SDPT3: Infeasible path-following algorithms

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*****
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	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	1.5e+00	1.0e+01	1.3e+06	2.236957e+04	0.000000e+00	0:0:00	chol	1✓	
1	1.000	0.900	3.8e-05	1.1e+00	1.5e+05	2.133338e+04	-7.084648e+01	0:0:00	chol	1✓	
2	0.313	0.941	2.6e-05	9.8e-02	3.7e+04	2.378662e+04	-1.806927e+02	0:0:00	chol	1✓	
3	1.000	0.998	5.4e-06	1.0e-02	1.9e+04	1.736263e+04	-1.953315e+02	0:0:00	chol	1✓	
4	0.963	1.000	2.0e-06	3.0e-03	7.3e+02	5.361097e+02	-1.858189e+02	0:0:00	chol	1✓	
5	1.000	0.236	5.2e-06	2.4e-03	7.5e+02	5.896199e+02	-1.520956e+02	0:0:00	chol	1✓	
6	0.400	1.000	3.1e-06	3.1e-05	6.4e+02	4.930318e+02	-1.505726e+02	0:0:00	chol	1✓	
7	1.000	0.749	1.5e-08	1.1e-05	3.9e+02	2.894007e+02	-9.971509e+01	0:0:00	chol	1✓	
8	1.000	1.000	4.3e-09	3.0e-07	2.4e+02	1.510341e+02	-8.582352e+01	0:0:00	chol	1✓	
9	1.000	1.000	4.5e-10	3.1e-08	9.8e+01	3.177757e+01	-6.581085e+01	0:0:00	chol	1✓	
10	1.000	1.000	1.3e-12	3.1e-09	5.2e+01	-1.074338e+01	-6.291249e+01	0:0:00	chol	1✓	
11	1.000	1.000	4.4e-14	3.0e-10	2.1e+01	-3.440008e+01	-5.533472e+01	0:0:00	chol	1✓	
12	1.000	1.000	1.4e-13	3.1e-11	8.2e+00	-4.544344e+01	-5.363835e+01	0:0:00	chol	1✓	
13	1.000	1.000	1.9e-14	4.0e-12	3.3e+00	-4.896564e+01	-5.224321e+01	0:0:00	chol	1✓	
14	1.000	1.000	1.6e-14	1.3e-12	1.1e+00	-5.073522e+01	-5.185690e+01	0:0:00	chol	1✓	
15	1.000	1.000	1.3e-14	1.0e-12	4.5e-01	-5.120733e+01	-5.166092e+01	0:0:00	chol	1✓	
16	1.000	1.000	8.2e-15	1.0e-12	1.4e-01	-5.145776e+01	-5.159925e+01	0:0:00	chol	1✓	
17	1.000	1.000	2.9e-15	1.0e-12	5.9e-02	-5.151620e+01	-5.157486e+01	0:0:00	chol	1✓	
18	1.000	1.000	7.0e-15	1.0e-12	1.6e-02	-5.154982e+01	-5.156625e+01	0:0:00	chol	1✓	
19	1.000	1.000	5.2e-15	1.0e-12	6.8e-03	-5.155676e+01	-5.156354e+01	0:0:00	chol	1✓	

```

20|0.995|1.000|1.3e-14|1.0e-12|1.4e-03|-5.156104e+01 -5.156246e+01| 0:0:00| chol 1✓
1
21|0.976|1.000|1.1e-12|1.0e-12|6.2e-04|-5.156171e+01 -5.156233e+01| 0:0:00| chol 1✓
1
22|1.000|1.000|1.3e-13|1.0e-12|1.5e-04|-5.156211e+01 -5.156225e+01| 0:0:00| chol 1✓
1
23|0.714|0.980|2.7e-12|1.0e-12|6.5e-05|-5.156218e+01 -5.156225e+01| 0:0:00| chol 1✓
1
24|0.948|0.989|2.1e-12|1.0e-12|1.3e-05|-5.156223e+01 -5.156225e+01| 0:0:00| chol 2✓
2
25|0.833|1.000|5.8e-13|1.0e-12|5.6e-06|-5.156224e+01 -5.156224e+01| 0:0:00|
stop: max(relative gap, infeasibilities) < 1.00e-07

```

```

-----
number of iterations    = 25
primal objective value = -5.15622394e+01
dual   objective value = -5.15622449e+01
gap := trace(XZ)        = 5.57e-06
relative gap           = 5.35e-08
actual relative gap    = 5.35e-08
rel. primal infeas     = 5.76e-13
rel. dual   infeas     = 1.00e-12
norm(X), norm(y), norm(Z) = 8.6e-01, 5.2e+01, 2.0e+01
norm(A), norm(b), norm(C) = 1.5e+02, 2.9e+00, 7.7e+01
Total CPU time (secs)   = 0.49
CPU time per iteration = 0.02
termination code        = 0
DIMACS errors: 8.2e-13  0.0e+00  1.4e-12  0.0e+00  5.3e-08  5.3e-08
-----

```

ans =

51.5622

```

num. of constraints = 25
dim. of socp var   = 26,   num. of socp blk = 1
dim. of linear var = 800
*****
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|6.7e+02|7.4e+08| 1.311344e+07  0.000000e+00| 0:0:00| chol 1✓
1
1|1.000|0.969|1.7e-07|2.1e+01|4.5e+07| 1.212656e+07 -2.010388e+04| 0:0:00| chol 1✓
1
2|0.340|0.458|1.1e-07|1.1e+01|3.3e+07| 1.194619e+07 -6.327344e+04| 0:0:00| chol 1✓
1
3|0.271|0.384|8.2e-08|7.0e+00|2.6e+07| 1.207463e+07 -1.128344e+05| 0:0:00| chol 1✓
1
4|0.224|0.516|6.3e-08|3.4e+00|2.0e+07| 1.201020e+07 -1.646525e+05| 0:0:00| chol 1✓
1

```

```
5|0.334|0.321|4.1e-08|2.3e+00|1.7e+07| 1.136117e+07 -2.033866e+05| 0:0:00| chol 1✓  
1  
6|0.201|0.749|3.1e-08|5.8e-01|1.3e+07| 1.083525e+07 -1.667958e+05| 0:0:00| chol 1✓  
1  
7|0.210|0.145|2.5e-08|5.0e-01|1.2e+07| 1.007119e+07 -1.934370e+05| 0:0:00| chol 1✓  
2  
8|0.348|0.382|1.6e-08|3.1e-01|9.4e+06| 8.308659e+06 -1.576401e+05| 0:0:00| chol 2✓  
2  
9|0.119|0.349|1.6e-08|2.0e-01|8.7e+06| 7.916871e+06 -1.399004e+05| 0:0:00| chol 2✓  
2  
10|0.090|0.086|4.5e-09|1.8e-01|8.4e+06| 7.602188e+06 -1.479630e+05| 0:0:00| chol 2✓  
2  
11|0.049|0.053|2.8e-09|1.7e-01|8.2e+06| 7.497504e+06 -1.539010e+05| 0:0:00| chol 2✓  
2  
12|0.036|0.053|1.4e-08|1.6e-01|8.2e+06| 7.433632e+06 -1.593442e+05| 0:0:00| chol 2✓  
2  
13|0.032|0.078|2.7e-08|1.5e-01|8.1e+06| 7.378925e+06 -1.626855e+05| 0:0:00| chol 2✓  
2  
14|0.036|0.158|2.7e-08|1.3e-01|7.9e+06| 7.319286e+06 -1.561408e+05| 0:0:00| chol 2✓  
2  
15|0.051|0.101|6.1e-08|1.1e-01|7.8e+06| 7.251044e+06 -1.499331e+05| 0:0:00| chol 2✓  
2  
16|0.091|0.057|1.7e-08|1.1e-01|7.7e+06| 7.133345e+06 -1.619100e+05| 0:0:00| chol 2✓  
2  
17|0.033|0.313|1.5e-08|7.4e-02|7.5e+06| 7.049662e+06 -1.489782e+05| 0:0:00| chol 2✓  
1  
18|0.114|0.103|2.9e-08|6.6e-02|7.2e+06| 6.706512e+06 -1.547058e+05| 0:0:00| chol 2✓  
2  
19|0.045|0.141|2.1e-08|5.7e-02|7.1e+06| 6.649910e+06 -1.563017e+05| 0:0:00| chol 2✓  
2  
20|0.053|0.134|2.1e-08|4.9e-02|7.0e+06| 6.576694e+06 -1.605236e+05| 0:0:00| chol 2✓  
2  
21|0.058|0.183|1.4e-08|4.0e-02|6.9e+06| 6.514106e+06 -1.588965e+05| 0:0:00| chol 2✓  
2  
22|0.062|0.136|8.1e-08|3.5e-02|6.8e+06| 6.444481e+06 -1.645399e+05| 0:0:00| chol 2✓  
2  
23|0.069|0.215|7.7e-08|2.7e-02|6.7e+06| 6.375478e+06 -1.620162e+05| 0:0:00| chol 2✓  
2  
24|0.086|0.227|1.2e-07|2.1e-02|6.6e+06| 6.266836e+06 -1.770588e+05| 0:0:00| chol 2✓  
2  
25|0.130|0.838|2.5e-07|3.4e-03|6.3e+06| 6.142617e+06 -1.452209e+05| 0:0:00| chol 2✓  
2  
26|0.202|0.413|2.1e-07|2.0e-03|6.2e+06| 5.996921e+06 -1.579139e+05| 0:0:00| chol 2✓  
2  
27|0.223|0.760|1.6e-07|4.8e-04|6.0e+06| 5.725699e+06 -2.516744e+05| 0:0:00| chol 2✓  
2  
28|0.286|1.000|7.7e-08|3.2e-08|5.6e+06| 5.484968e+06 -1.475621e+05| 0:0:00| chol 1✓  
2  
29|0.624|1.000|3.5e-08|1.5e-08|4.7e+06| 4.446316e+06 -2.899601e+05| 0:0:00| chol 1✓  
1  
30|1.000|1.000|9.8e-09|7.1e-09|3.2e+06| 3.011617e+06 -1.741976e+05| 0:0:00| chol 1✓  
1  
31|1.000|1.000|3.9e-08|2.0e-09|9.1e+05| 8.463711e+05 -6.141343e+04| 0:0:00| chol 1✓  
1
```

```

32|1.000|1.000|1.4e-08|2.9e-09|4.0e+05| 3.726838e+05 -2.473610e+04| 0:0:00| chol 1✓
1
33|1.000|1.000|1.4e-09|2.7e-09|1.1e+05| 1.008765e+05 -9.117251e+03| 0:0:00| chol 1✓
1
34|1.000|1.000|3.8e-10|2.7e-10|5.1e+04| 4.752118e+04 -3.879849e+03| 0:0:00| chol 1✓
1
35|1.000|1.000|5.3e-10|7.6e-11|1.7e+04| 1.557624e+04 -1.669859e+03| 0:0:00| chol 1✓
1
36|1.000|1.000|2.0e-11|1.1e-10|8.2e+03| 7.530169e+03 -7.016756e+02| 0:0:00| chol 1✓
1
37|1.000|1.000|1.8e-11|4.0e-12|2.9e+03| 2.612444e+03 -3.328187e+02| 0:0:00| chol 1✓
1
38|1.000|1.000|8.2e-12|3.7e-12|1.2e+03| 1.084653e+03 -1.368228e+02| 0:0:00| chol 1✓
1
39|1.000|1.000|6.5e-12|1.6e-12|3.7e+02| 3.075361e+02 -6.479738e+01| 0:0:00| chol 1✓
1
40|1.000|1.000|2.0e-12|1.3e-12|1.6e+02| 1.283786e+02 -3.426812e+01| 0:0:00| chol 1✓
1
41|1.000|1.000|7.8e-13|1.0e-12|5.2e+01| 2.961784e+01 -2.236366e+01| 0:0:00| chol 1✓
1
42|1.000|1.000|3.3e-13|1.0e-12|2.4e+01| 7.009368e+00 -1.724669e+01| 0:0:00| chol 1✓
1
43|1.000|1.000|5.8e-13|1.0e-12|7.4e+00|-7.649257e+00 -1.506133e+01| 0:0:00| chol 1✓
1
44|1.000|1.000|1.6e-13|1.0e-12|3.2e+00|-1.108139e+01 -1.423751e+01| 0:0:00| chol 1✓
1
45|1.000|1.000|2.0e-13|1.0e-12|8.6e-01|-1.300761e+01 -1.386603e+01| 0:0:00| chol 1✓
1
46|1.000|1.000|2.4e-12|1.0e-12|3.4e-01|-1.341556e+01 -1.375975e+01| 0:0:00| chol 1✓
1
47|1.000|0.937|8.9e-12|1.1e-12|6.3e-02|-1.365022e+01 -1.371344e+01| 0:0:00| chol 2✓
2
48|0.803|1.000|1.3e-12|1.5e-12|3.0e-02|-1.367555e+01 -1.370532e+01| 0:0:00| chol 2✓
1
49|0.987|1.000|2.7e-11|1.0e-12|7.2e-03|-1.369540e+01 -1.370259e+01| 0:0:00| chol 2✓
2
50|0.828|0.982|3.3e-12|1.5e-12|2.4e-03|-1.369949e+01 -1.370184e+01| 0:0:00|
  sqlp stop: maximum number of iterations reached

```

```

-----
number of iterations    = 50
primal objective value = -1.36994926e+01
dual   objective value = -1.37018441e+01
gap := trace(XZ)       = 2.35e-03
relative gap           = 8.28e-05
actual relative gap    = 8.28e-05
rel. primal infeas     = 3.32e-12
rel. dual   infeas     = 1.52e-12
norm(X), norm(y), norm(Z) = 2.9e+03, 8.9e+01, 5.8e+01
norm(A), norm(b), norm(C) = 1.1e+05, 4.0e+04, 7.7e+01
Total CPU time (secs)   = 0.29
CPU time per iteration = 0.01
termination code        = -6
DIMACS errors: 6.5e-12  0.0e+00  2.2e-12  0.0e+00  8.3e-05  8.3e-05
-----

```

ans =

13.7018

Iteration 2 Total error is: 0.040847

num. of constraints = 25  
dim. of socp var = 26, num. of socp blk = 1  
dim. of linear var = 800

\*\*\*\*\*

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	1.1e+09	1.866724e+07	0.000000e+00	0:0:00	chol	1	✓
1	1	0.891	0.866	1.1e-01	2.0e+01	1.6e+08	1.758228e+07	8.347126e+03	0:0:00	chol	1
1	2	0.774	0.679	2.5e-02	6.3e+00	9.3e+07	2.318531e+07	-1.380767e+04	0:0:00	chol	1
1	3	0.647	0.600	8.7e-03	2.5e+00	6.0e+07	2.556421e+07	-5.483537e+04	0:0:00	chol	1
1	4	0.406	0.474	5.2e-03	1.3e+00	4.6e+07	2.571798e+07	-1.082258e+05	0:0:00	chol	1
1	5	0.264	0.425	3.8e-03	7.7e-01	3.8e+07	2.523001e+07	-1.796562e+05	0:0:00	chol	1
1	6	0.221	0.416	3.0e-03	4.5e-01	3.2e+07	2.435730e+07	-2.709517e+05	0:0:00	chol	1
1	7	0.214	0.431	2.3e-03	2.6e-01	2.8e+07	2.315407e+07	-3.809533e+05	0:0:00	chol	1
1	8	0.237	0.441	1.8e-03	1.4e-01	2.5e+07	2.156859e+07	-4.936652e+05	0:0:00	chol	1
1	9	0.255	0.470	1.3e-03	7.6e-02	2.2e+07	1.973678e+07	-5.878297e+05	0:0:00	chol	1
1	10	0.302	0.450	9.2e-04	4.2e-02	1.9e+07	1.750360e+07	-6.426092e+05	0:0:00	chol	1
1	11	0.296	0.506	6.5e-04	2.1e-02	1.7e+07	1.552276e+07	-6.472295e+05	0:0:00	chol	1
1	12	0.372	0.392	4.1e-04	1.3e-02	1.4e+07	1.335434e+07	-6.458245e+05	0:0:00	chol	2
1	13	0.307	0.750	2.8e-04	3.2e-03	1.3e+07	1.249584e+07	-6.486574e+05	0:0:00	chol	2
2	14	0.158	0.736	2.4e-04	8.6e-04	1.3e+07	1.228788e+07	-5.468285e+05	0:0:00	chol	1
2	15	0.428	0.799	1.4e-04	2.0e-04	1.2e+07	1.139699e+07	-8.753242e+05	0:0:00	chol	1
2	16	0.510	1.000	6.7e-05	3.3e-05	1.1e+07	1.030863e+07	-6.781513e+05	0:0:00	chol	1
1	17	1.000	1.000	2.1e-08	1.6e-05	6.5e+06	5.862438e+06	-5.878349e+05	0:0:00	chol	1
1	18	1.000	1.000	4.1e-08	1.4e-06	2.3e+06	2.113441e+06	-2.279837e+05	0:0:00	chol	1

```

1
19|1.000|1.000|9.9e-09|7.1e-07|1.0e+06| 9.077392e+05 -1.279687e+05| 0:0:00| chol 1✓
1
20|1.000|1.000|3.1e-09|7.2e-08|3.9e+05| 3.342233e+05 -5.116827e+04| 0:0:00| chol 1✓
1
21|1.000|1.000|2.3e-10|7.7e-09|1.5e+05| 1.272917e+05 -2.443209e+04| 0:0:00| chol 1✓
1
22|1.000|1.000|7.8e-10|7.5e-10|6.3e+04| 5.323300e+04 -1.016850e+04| 0:0:00| chol 1✓
1
23|1.000|1.000|3.0e-11|1.4e-10|2.4e+04| 1.887429e+04 -4.682092e+03| 0:0:00| chol 1✓
1
24|1.000|1.000|1.6e-11|1.3e-11|9.7e+03| 7.904859e+03 -1.816630e+03| 0:0:00| chol 1✓
1
25|1.000|1.000|1.4e-11|3.9e-12|3.7e+03| 2.841682e+03 -8.117983e+02| 0:0:00| chol 1✓
1
26|1.000|1.000|1.2e-12|2.8e-12|1.5e+03| 1.164323e+03 -3.037444e+02| 0:0:00| chol 1✓
1
27|1.000|1.000|7.0e-13|1.0e-12|4.8e+02| 3.585628e+02 -1.227979e+02| 0:0:00| chol 1✓
1
28|1.000|1.000|1.2e-12|1.0e-12|1.9e+02| 1.402932e+02 -5.302044e+01| 0:0:00| chol 1✓
1
29|1.000|1.000|8.1e-14|1.0e-12|5.2e+01| 2.560433e+01 -2.673739e+01| 0:0:00| chol 1✓
1
30|1.000|1.000|5.6e-13|1.0e-12|2.2e+01| 2.507082e+00 -1.956467e+01| 0:0:00| chol 1✓
1
31|1.000|1.000|6.7e-13|1.0e-12|5.3e+00|-1.130374e+01 -1.659658e+01| 0:0:00| chol 1✓
1
32|1.000|1.000|4.5e-12|1.0e-12|2.4e+00|-1.350464e+01 -1.595289e+01| 0:0:00| chol 1✓
1
33|0.992|1.000|2.0e-12|1.0e-12|5.6e-01|-1.506973e+01 -1.562596e+01| 0:0:00| chol 1✓
2
34|1.000|1.000|2.7e-13|1.0e-12|2.4e-01|-1.532421e+01 -1.556380e+01| 0:0:00| chol 1✓
2
35|0.975|0.945|2.6e-13|1.1e-12|4.5e-02|-1.548732e+01 -1.553214e+01| 0:0:00| chol 2✓
2
36|0.898|1.000|3.4e-12|1.0e-12|2.1e-02|-1.550631e+01 -1.552747e+01| 0:0:00| chol 2✓
2
37|0.969|0.970|3.6e-12|1.0e-12|3.0e-03|-1.552187e+01 -1.552492e+01| 0:0:00| chol 2✓
2
38|1.000|1.000|6.6e-12|1.0e-12|6.3e-04|-1.552395e+01 -1.552458e+01| 0:0:00| chol 3✓
3
39|1.000|0.965|2.5e-11|1.4e-12|6.4e-05|-1.552444e+01 -1.552450e+01| 0:0:00| chol 3✓
5
40|1.000|0.998|1.5e-10|2.0e-12|2.5e-06|-1.552449e+01 -1.552449e+01| 0:0:00|
stop: max(relative gap, infeasibilities) < 1.00e-07
-----
number of iterations    = 40
primal objective value = -1.55244884e+01
dual  objective value = -1.55244908e+01
gap := trace(XZ)       = 2.53e-06
relative gap           = 7.89e-08
actual relative gap    = 7.59e-08
rel. primal infeas     = 1.47e-10
rel. dual  infeas     = 1.98e-12

```

ans =

Iteration 3 Total error is: 0.015659

SDPT3: Infeasible path-following algorithms

\*\*\*\*\*

it	pstep	dstep	pinfeas	dinfeas	gap	prim-obj	dual-obj	cputime
----	-------	-------	---------	---------	-----	----------	----------	---------

[illegible]

```
15|0.064|0.244|2.2e-08|6.5e+00|2.2e+08| 2.021251e+08 -4.298846e+06| 0:0:00| chol 2✓  
2  
16|0.067|0.069|2.1e-08|6.1e+00|2.2e+08| 1.970042e+08 -4.422601e+06| 0:0:00| chol 2✓  
2  
17|0.040|0.055|1.7e-08|5.7e+00|2.2e+08| 1.949974e+08 -4.545881e+06| 0:0:00| chol *  
warning: symqmr failed: 2.0  
switch to LU factor. lu 2 1  
18|0.033|0.066|5.0e-08|5.4e+00|2.1e+08| 1.934831e+08 -4.621266e+06| 0:0:00| lu 2✓  
1  
19|0.034|0.135|3.0e-08|4.6e+00|2.1e+08| 1.919501e+08 -4.439045e+06| 0:0:00| lu 2✓  
1  
20|0.046|0.124|7.2e-08|4.1e+00|2.1e+08| 1.900329e+08 -4.108756e+06| 0:0:00| lu 2✓  
1  
21|0.069|0.060|2.6e-07|3.8e+00|2.0e+08| 1.873202e+08 -4.282267e+06| 0:0:00| lu 2✓  
1  
22|0.027|0.084|2.5e-07|3.5e+00|2.0e+08| 1.861904e+08 -4.507395e+06| 0:0:00| lu 2✓  
1  
23|0.055|0.097|2.2e-07|3.2e+00|2.0e+08| 1.831666e+08 -4.563382e+06| 0:0:00| lu 2✓  
1  
24|0.045|0.048|4.2e-07|3.0e+00|2.0e+08| 1.806279e+08 -4.685492e+06| 0:0:00| lu 2✓  
1  
25|0.035|0.038|6.5e-07|2.9e+00|2.0e+08| 1.790697e+08 -4.796420e+06| 0:0:00| lu * 3✓  
1  
26|0.030|0.045|5.5e-07|2.8e+00|1.9e+08| 1.779542e+08 -4.886242e+06| 0:0:00| lu * 3✓  
1  
27|0.026|0.082|4.6e-07|2.5e+00|1.9e+08| 1.767986e+08 -4.821546e+06| 0:0:00| lu 2✓  
1  
28|0.037|0.062|2.9e-08|2.4e+00|1.9e+08| 1.757494e+08 -4.553028e+06| 0:0:00| lu * 3✓  
1  
29|0.016|0.035|3.2e-07|2.3e+00|1.9e+08| 1.753311e+08 -4.892006e+06| 0:0:00| lu 2✓  
1  
30|0.062|0.211|3.2e-07|1.8e+00|1.9e+08| 1.727009e+08 -4.496971e+06| 0:0:00| lu 2✓  
1  
31|0.079|0.086|2.9e-07|1.7e+00|1.8e+08| 1.653701e+08 -4.476667e+06| 0:0:00| lu 2✓  
1  
32|0.038|0.044|2.4e-07|1.6e+00|1.8e+08| 1.636066e+08 -4.574523e+06| 0:0:00| lu 2✓  
1  
33|0.031|0.044|8.1e-07|1.5e+00|1.8e+08| 1.625193e+08 -4.662824e+06| 0:0:00| lu * 3✓  
1  
34|0.026|0.063|1.0e-06|1.4e+00|1.7e+08| 1.615743e+08 -4.687998e+06| 0:0:00| lu 2✓  
1  
35|0.030|0.083|3.5e-06|1.3e+00|1.7e+08| 1.608111e+08 -4.392723e+06| 0:0:00| lu * 3✓  
1  
36|0.019|0.029|3.2e-06|1.3e+00|1.7e+08| 1.603640e+08 -4.594390e+06| 0:0:00| lu 2✓  
1  
37|0.052|0.294|3.1e-06|8.9e-01|1.7e+08| 1.588622e+08 -3.934184e+06| 0:0:00| lu 2✓  
1  
38|0.143|0.166|2.6e-06|7.4e-01|1.5e+08| 1.442025e+08 -3.660755e+06| 0:0:00| lu 2✓  
1  
39|0.029|0.079|2.3e-06|6.8e-01|1.5e+08| 1.431448e+08 -3.770962e+06| 0:0:00| lu 2✓  
1  
40|0.048|0.118|2.2e-06|6.0e-01|1.5e+08| 1.419176e+08 -3.773451e+06| 0:0:00| lu 2✓  
1  
41|0.045|0.080|2.1e-06|5.6e-01|1.5e+08| 1.400154e+08 -3.838954e+06| 0:0:00| lu * 3✓
```



```

1
42|0.040|0.075|1.1e-06|5.1e-01|1.5e+08| 1.389582e+08 -3.920478e+06| 0:0:00| lu * 3✓
1
43|0.034|0.078|1.1e-06|4.7e-01|1.5e+08| 1.379554e+08 -3.979756e+06| 0:0:00| lu 2✓
1
44|0.037|0.227|4.0e-06|3.7e-01|1.5e+08| 1.371681e+08 -3.628110e+06| 0:0:00| lu 2✓
1
45|0.048|0.169|4.0e-06|3.0e-01|1.4e+08| 1.360357e+08 -3.552252e+06| 0:0:00| lu 2✓
1
46|0.073|0.100|4.9e-06|2.7e-01|1.4e+08| 1.340229e+08 -3.649490e+06| 0:0:00| lu 2✓
1
47|0.055|0.081|5.7e-06|2.5e-01|1.4e+08| 1.325362e+08 -3.837266e+06| 0:0:00| lu * 3✓
1
48|0.048|0.065|2.6e-07|2.4e-01|1.4e+08| 1.312173e+08 -3.982990e+06| 0:0:00| lu 2✓
1
49|0.044|0.138|2.7e-07|2.0e-01|1.4e+08| 1.303626e+08 -4.009239e+06| 0:0:00| lu 2✓
1
50|0.038|0.184|3.4e-07|1.7e-01|1.4e+08| 1.295068e+08 -3.894396e+06| 0:0:00|
  sqlp stop: maximum number of iterations reached

```

```

-----
number of iterations    = 50
primal objective value =  1.58862201e+08
dual   objective value = -3.93418429e+06
gap := trace(XZ)        = 1.69e+08
relative gap           = 1.04e+00
actual relative gap    = 1.00e+00
rel. primal infeas     = 3.07e-06
rel. dual   infeas     = 8.91e-01
norm(X), norm(y), norm(Z) = 6.2e+07, 3.9e+06, 5.6e+06
norm(A), norm(b), norm(C) = 4.6e+06, 1.1e+06, 7.7e+01
Total CPU time (secs)   = 0.37
CPU time per iteration = 0.01
termination code        = -6
DIMACS errors: 6.7e-06  0.0e+00  1.3e+00  0.0e+00  1.0e+00  1.0e+00
-----

```

ans =

1.3815e+08

Iteration 4 Total error is: 76.1361

```

num. of constraints = 25
dim. of socp var   = 26,   num. of socp blk = 1
dim. of linear var = 800

```

```

*****
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|1.1e+01|1.6e+07| 2.827578e+05  0.000000e+00| 0:0:00| chol 1✓
1

```

```
1|0.900|0.883|1.0e-01|1.4e+00|2.2e+06| 2.665048e+05 8.087878e+01| 0:0:00| chol 1✓  
1  
2|0.780|0.711|2.2e-02|4.7e-01|1.2e+06| 3.443902e+05 -2.801359e+02| 0:0:00| chol 1✓  
1  
3|0.812|0.753|4.1e-03|1.5e-01|6.5e+05| 3.590090e+05 -8.855932e+02| 0:0:00| chol 1✓  
1  
4|0.796|0.898|8.4e-04|3.6e-02|3.4e+05| 2.810250e+05 -1.502388e+03| 0:0:00| chol 1✓  
1  
5|1.000|1.000|1.3e-08|1.2e-02|4.2e+04| 3.828347e+04 -1.428817e+03| 0:0:00| chol 1✓  
1  
6|0.626|0.618|1.8e-08|6.6e-03|2.9e+04| 2.751884e+04 -9.145599e+02| 0:0:00| chol 1✓  
1  
7|1.000|1.000|1.1e-08|1.0e-03|2.1e+04| 1.976966e+04 -6.211928e+02| 0:0:00| chol 1✓  
1  
8|1.000|1.000|4.3e-10|3.1e-04|9.2e+03| 8.828941e+03 -3.771194e+02| 0:0:00| chol 1✓  
1  
9|1.000|1.000|1.1e-10|9.3e-05|4.7e+03| 4.455207e+03 -2.576903e+02| 0:0:00| chol 1✓  
1  
10|1.000|1.000|2.1e-12|9.3e-06|2.0e+03| 1.915912e+03 -1.260807e+02| 0:0:00| chol 1✓  
1  
11|1.000|1.000|9.5e-13|9.3e-07|8.8e+02| 8.054057e+02 -7.905536e+01| 0:0:00| chol 1✓  
1  
12|1.000|1.000|2.3e-14|9.3e-08|3.7e+02| 3.239462e+02 -4.162184e+01| 0:0:00| chol 1✓  
1  
13|1.000|1.000|3.3e-14|9.3e-09|1.3e+02| 9.817911e+01 -2.821659e+01| 0:0:00| chol 1✓  
1  
14|1.000|1.000|3.1e-14|9.4e-10|5.0e+01| 2.916624e+01 -2.097785e+01| 0:0:00| chol 1✓  
1  
15|1.000|1.000|2.8e-14|9.4e-11|1.7e+01|-1.306477e+00 -1.818258e+01| 0:0:00| chol 1✓  
1  
16|1.000|1.000|9.1e-15|1.0e-11|7.6e+00|-9.246963e+00 -1.687235e+01| 0:0:00| chol 1✓  
1  
17|1.000|1.000|3.4e-14|1.9e-12|2.4e+00|-1.386994e+01 -1.630064e+01| 0:0:00| chol 1✓  
1  
18|1.000|1.000|2.8e-14|1.1e-12|1.0e+00|-1.504058e+01 -1.607685e+01| 0:0:00| chol 1✓  
1  
19|1.000|1.000|2.5e-13|1.0e-12|2.7e-01|-1.570039e+01 -1.596648e+01| 0:0:00| chol 1✓  
1  
20|1.000|1.000|4.3e-12|1.0e-12|1.1e-01|-1.583464e+01 -1.593967e+01| 0:0:00| chol 1✓  
1  
21|0.995|0.913|2.5e-12|1.1e-12|1.8e-02|-1.590878e+01 -1.592707e+01| 0:0:00| chol 1✓  
1  
22|0.895|1.000|2.5e-11|1.0e-12|6.8e-03|-1.591768e+01 -1.592447e+01| 0:0:00| chol 1✓  
2  
23|0.985|1.000|7.2e-13|1.5e-12|1.2e-03|-1.592264e+01 -1.592381e+01| 0:0:00| chol 2✓  
2  
24|0.965|0.901|2.5e-12|1.1e-12|6.0e-05|-1.592361e+01 -1.592367e+01| 0:0:00| chol 2✓  
2  
25|0.810|0.744|3.1e-11|1.3e-12|3.0e-05|-1.592364e+01 -1.592367e+01| 0:0:00| chol 3✓  
3  
26|0.949|0.967|4.2e-11|1.5e-12|1.7e-05|-1.592365e+01 -1.592366e+01| 0:0:00| chol 3✓  
4  
27|1.000|1.000|9.7e-11|2.3e-12|9.4e-06|-1.592365e+01 -1.592366e+01| 0:0:00| chol 3✓  
3
```

```
28|1.000|1.000|9.9e-12|3.4e-12|2.0e-06|-1.592366e+01 -1.592366e+01| 0:0:00|
stop: max(relative gap, infeasibilities) < 1.00e-07
```

```
-----
number of iterations    = 28
primal objective value = -1.59236585e+01
dual   objective value = -1.59236605e+01
gap := trace(XZ)       = 1.98e-06
relative gap           = 6.03e-08
actual relative gap    = 6.03e-08
rel. primal infeas     = 9.88e-12
rel. dual   infeas     = 3.38e-12
norm(X), norm(y), norm(Z) = 2.6e+01, 8.7e+01, 5.5e+01
norm(A), norm(b), norm(C) = 4.5e+02, 9.3e+02, 7.7e+01
Total CPU time (secs)   = 0.16
CPU time per iteration = 0.01
termination code        = 0
DIMACS errors: 2.4e-11  0.0e+00  4.8e-12  0.0e+00  6.0e-08  6.0e-08
-----
```

```
ans =
```

```
15.9237
```

```
Iteration    5    Total error is: 0.028969
```

```
num. of constraints = 25
dim. of socp var   = 26,   num. of socp blk = 1
dim. of linear var = 800
```

```
*****
```

```
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|2.0e+01|9.3e+07| 1.636538e+06  0.000000e+00| 0:0:00| chol 1✓
1
1|0.857|0.827|1.4e-01|3.5e+00|1.8e+07| 1.559812e+06  4.234665e+02| 0:0:00| chol 1✓
1
2|0.792|0.682|3.0e-02|1.2e+00|1.0e+07| 2.148454e+06 -2.419280e+03| 0:0:00| chol 1✓
1
3|0.652|0.607|1.0e-02|4.7e-01|6.4e+06| 2.454113e+06 -7.406479e+03| 0:0:00| chol 1✓
1
4|0.408|0.486|6.1e-03|2.5e-01|4.8e+06| 2.518360e+06 -1.363625e+04| 0:0:00| chol 1✓
1
5|0.273|0.446|4.4e-03|1.4e-01|3.8e+06| 2.486623e+06 -2.174011e+04| 0:0:00| chol 1✓
1
6|0.239|0.451|3.4e-03|8.0e-02|3.2e+06| 2.396610e+06 -3.156043e+04| 0:0:00| chol 1✓
1
7|0.246|0.492|2.6e-03|4.2e-02|2.7e+06| 2.254978e+06 -4.242403e+04| 0:0:00| chol 1✓
1
8|0.317|0.544|1.7e-03|2.0e-02|2.3e+06| 2.023217e+06 -5.153480e+04| 0:0:00| chol 1✓
1
9|0.452|0.755|9.6e-04|5.7e-03|1.7e+06| 1.618690e+06 -5.532029e+04| 0:0:00| chol 1✓
```

```

1
10|1.000|1.000|4.0e-08|5.5e-04|9.2e+05| 8.709821e+05 -4.840498e+04| 0:0:00| chol 1✓
1
11|0.944|1.000|4.1e-08|1.8e-04|5.4e+05| 4.989375e+05 -3.574728e+04| 0:0:00| chol 1✓
1
12|1.000|1.000|1.2e-08|9.0e-05|3.1e+05| 2.893401e+05 -2.380583e+04| 0:0:00| chol 1✓
1
13|1.000|1.000|2.2e-09|4.5e-05|1.5e+05| 1.326471e+05 -1.535568e+04| 0:0:00| chol 1✓
1
14|1.000|1.000|1.1e-09|2.3e-05|6.7e+04| 5.907937e+04 -7.611082e+03| 0:0:00| chol 1✓
1
15|1.000|1.000|3.0e-10|1.1e-05|2.8e+04| 2.372867e+04 -4.059344e+03| 0:0:00| chol 1✓
1
16|1.000|1.000|1.3e-10|5.6e-06|1.1e+04| 9.727276e+03 -1.662299e+03| 0:0:00| chol 1✓
1
17|1.000|1.000|2.3e-11|1.7e-06|4.3e+03| 3.515179e+03 -7.636918e+02| 0:0:00| chol 1✓
1
18|1.000|1.000|6.9e-11|5.1e-07|1.7e+03| 1.350636e+03 -3.007031e+02| 0:0:00| chol 1✓
1
19|1.000|1.000|9.1e-12|1.5e-07|5.7e+02| 4.296862e+02 -1.358840e+02| 0:0:00| chol 1✓
1
20|1.000|1.000|1.2e-11|1.5e-08|2.3e+02| 1.672682e+02 -6.662552e+01| 0:0:00| chol 1✓
1
21|1.000|1.000|1.9e-11|1.5e-09|7.6e+01| 3.427337e+01 -4.140441e+01| 0:0:00| chol 1✓
1
22|1.000|1.000|8.8e-13|1.6e-10|3.1e+01|-1.121643e+00 -3.164632e+01| 0:0:00| chol 1✓
1
23|1.000|1.000|1.7e-12|1.6e-11|7.9e+00|-1.981881e+01 -2.767752e+01| 0:0:00| chol 1✓
1
24|1.000|1.000|8.0e-13|2.5e-12|3.3e+00|-2.336868e+01 -2.662162e+01| 0:0:00| chol 1✓
1
25|0.986|0.883|1.4e-12|1.4e-12|6.8e-01|-2.552092e+01 -2.619873e+01| 0:0:00| chol 2✓
2
26|1.000|1.000|4.4e-13|1.0e-12|2.8e-01|-2.581726e+01 -2.609904e+01| 0:0:00| chol 2✓
2
27|1.000|1.000|1.6e-12|1.0e-12|8.5e-02|-2.598292e+01 -2.606816e+01| 0:0:00| chol 2✓
2
28|1.000|1.000|1.6e-12|1.0e-12|3.4e-02|-2.602569e+01 -2.606002e+01| 0:0:00| chol 2✓
2
29|1.000|0.979|2.2e-12|1.0e-12|1.1e-02|-2.604592e+01 -2.605706e+01| 0:0:00| chol 2✓
2
30|0.772|1.000|9.7e-12|1.0e-12|5.7e-03|-2.605038e+01 -2.605611e+01| 0:0:00| chol 2✓
2
31|1.000|0.977|2.6e-12|1.5e-12|1.3e-03|-2.605440e+01 -2.605567e+01| 0:0:00| chol 2✓
2
32|0.609|0.977|3.4e-12|1.0e-12|6.3e-04|-2.605492e+01 -2.605555e+01| 0:0:00| chol 2✓
2
33|1.000|1.000|1.8e-11|1.0e-12|1.5e-04|-2.605537e+01 -2.605552e+01| 0:0:00| chol 2✓
3
34|1.000|1.000|1.5e-11|1.5e-12|1.3e-05|-2.605549e+01 -2.605550e+01| 0:0:00| chol 3✓
3
35|1.000|1.000|2.6e-11|2.2e-12|5.2e-07|-2.605550e+01 -2.605550e+01| 0:0:00|
stop: max(relative gap, infeasibilities) < 1.00e-07
-----

```

```

number of iterations    = 35
primal objective value = -2.60554984e+01
dual  objective value = -2.60554989e+01
gap := trace(XZ)       = 5.16e-07
relative gap           = 9.71e-09
actual relative gap    = 1.07e-08
rel. primal infeas     = 2.59e-11
rel. dual  infeas      = 2.25e-12
norm(X), norm(y), norm(Z) = 5.2e+02, 7.7e+01, 4.2e+01
norm(A), norm(b), norm(C) = 3.5e+03, 5.3e+03, 7.7e+01
Total CPU time (secs)   = 0.19
CPU time per iteration = 0.01
termination code        = 0
DIMACS errors: 6.2e-11  0.0e+00  3.2e-12  0.0e+00  1.1e-08  9.7e-09
-----

```

ans =

26.0555

Iteration 6 Total error is: 0.32096

```

num. of constraints = 25
dim. of socp var   = 26,   num. of socp blk = 1
dim. of linear var = 800

```

\*\*\*\*\*

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	2.1e+03	1.1e+09	1.891293e+07	0.000000e+00	0:0:00	chol	1	✓									
1	1.000	0.983	2.0e-07	3.5e+01	5.1e+07	1.746687e+07	-7.199004e+04	0:0:00	chol	1	✓									
1	2	0.592	0.506	8.2e-08	1.7e+01	3.0e+07	1.336085e+07	-1.052705e+05	0:0:00	chol	1	✓								
1	3	0.377	0.408	5.0e-08	1.0e+01	2.3e+07	1.233064e+07	-1.415702e+05	0:0:00	chol	2	✓								
2	4	0.294	0.461	3.4e-08	5.5e+00	1.8e+07	1.165351e+07	-1.537371e+05	0:0:00	chol	2	✓								
2	5	0.289	0.306	2.3e-08	3.8e+00	1.6e+07	1.072133e+07	-1.604017e+05	0:0:00	chol	2	✓								
2	6	0.190	0.402	1.8e-08	2.3e+00	1.3e+07	1.011182e+07	-1.473628e+05	0:0:00	chol	2	✓								
2	7	0.190	0.171	1.5e-08	1.9e+00	1.2e+07	9.433910e+06	-1.507086e+05	0:0:00	chol	1	✓								
2	8	0.094	0.214	1.3e-08	1.5e+00	1.1e+07	9.178933e+06	-1.502081e+05	0:0:00	chol	2	✓								
2	9	0.099	0.202	1.2e-08	1.2e+00	1.1e+07	8.921142e+06	-1.475608e+05	0:0:00	chol	2	✓								
2	10	0.092	0.218	1.1e-08	9.2e-01	1.0e+07	8.647428e+06	-1.411491e+05	0:0:00	chol	2	✓								

```
11|0.089|0.167|1.0e-08|7.7e-01|9.7e+06| 8.369051e+06 -1.380462e+05| 0:0:00| chol 2✓  
2  
12|0.066|0.149|8.2e-09|6.6e-01|9.3e+06| 8.180610e+06 -1.367314e+05| 0:0:00| chol 2✓  
2  
13|0.061|0.149|6.3e-09|5.6e-01|9.0e+06| 8.012318e+06 -1.345510e+05| 0:0:00| chol 2✓  
2  
14|0.060|0.157|8.5e-09|4.7e-01|8.7e+06| 7.846153e+06 -1.310864e+05| 0:0:00| chol 2✓  
2  
15|0.059|0.140|6.1e-09|4.0e-01|8.5e+06| 7.681227e+06 -1.286682e+05| 0:0:00| chol 2✓  
2  
16|0.051|0.126|7.2e-09|3.5e-01|8.3e+06| 7.545926e+06 -1.275573e+05| 0:0:00| chol 2✓  
2  
17|0.046|0.127|9.6e-09|3.1e-01|8.1e+06| 7.428915e+06 -1.263821e+05| 0:0:00| chol 2✓  
2  
18|0.045|0.134|1.0e-08|2.7e-01|7.9e+06| 7.324003e+06 -1.248574e+05| 0:0:00| chol 2✓  
2  
19|0.045|0.125|8.8e-09|2.3e-01|7.8e+06| 7.225978e+06 -1.240660e+05| 0:0:00| chol 2✓  
2  
20|0.041|0.117|9.9e-09|2.1e-01|7.7e+06| 7.140351e+06 -1.242173e+05| 0:0:00| chol 2✓  
2  
21|0.039|0.119|9.9e-09|1.8e-01|7.6e+06| 7.067403e+06 -1.244168e+05| 0:0:00| chol 2✓  
2  
22|0.039|0.123|1.0e-08|1.6e-01|7.5e+06| 7.000242e+06 -1.246350e+05| 0:0:00| chol 2✓  
2  
23|0.040|0.105|1.7e-08|1.4e-01|7.4e+06| 6.934415e+06 -1.258415e+05| 0:0:00| chol 2✓  
2  
24|0.038|0.088|4.9e-08|1.3e-01|7.3e+06| 6.873620e+06 -1.282692e+05| 0:0:00| chol 2✓  
2  
25|0.037|0.067|7.7e-08|1.2e-01|7.3e+06| 6.821373e+06 -1.301054e+05| 0:0:00| chol 2✓  
2  
26|0.059|0.034|7.7e-08|1.2e-01|7.2e+06| 6.754576e+06 -1.342185e+05| 0:0:00| chol 2✓  
2  
27|0.067|0.026|6.4e-07|1.1e-01|7.2e+06| 6.693809e+06 -1.467580e+05| 0:0:00| chol 2✓  
2  
28|0.016|0.283|6.3e-07|8.2e-02|7.0e+06| 6.680605e+06 -1.238220e+05| 0:0:00| chol 2✓  
2  
29|0.221|0.306|4.8e-07|5.7e-02|6.0e+06| 5.702435e+06 -1.154531e+05| 0:0:00| chol 2✓  
2  
30|0.073|0.176|4.4e-07|4.7e-02|5.9e+06| 5.580163e+06 -1.198691e+05| 0:0:00| chol 2✓  
2  
31|0.078|0.093|5.0e-07|4.3e-02|5.8e+06| 5.481321e+06 -1.279720e+05| 0:0:00| chol 2✓  
2  
32|0.088|0.075|8.5e-08|3.9e-02|5.7e+06| 5.388458e+06 -1.390429e+05| 0:0:00| chol 2✓  
2  
33|0.082|0.058|2.3e-07|3.7e-02|5.6e+06| 5.329185e+06 -1.406841e+05| 0:0:00| chol 2✓  
2  
34|0.012|0.043|3.9e-07|3.5e-02|5.6e+06| 5.318331e+06 -1.593036e+05| 0:0:00| chol 2✓  
2  
35|0.137|0.646|6.1e-07|1.3e-02|5.4e+06| 5.194830e+06 -1.251756e+05| 0:0:00| chol 2✓  
2  
36|0.191|0.381|9.4e-07|7.8e-03|5.2e+06| 5.007450e+06 -1.566850e+05| 0:0:00| chol 2✓  
2  
37|0.194|0.572|8.9e-07|3.3e-03|5.0e+06| 4.871042e+06 -1.260647e+05| 0:0:00| chol 2✓  
2
```

```

38|0.206|0.614|1.3e-06|1.3e-03|4.9e+06| 4.665192e+06 -2.093231e+05| 0:0:00| chol 2✓
2
39|0.346|1.000|6.9e-07|1.9e-07|4.5e+06| 4.418968e+06 -1.183110e+05| 0:0:00| chol 1✓
2
40|1.000|1.000|9.6e-08|1.4e-07|3.1e+06| 2.897451e+06 -2.158933e+05| 0:0:00| chol 1✓
2
41|1.000|1.000|6.0e-08|1.9e-08|1.4e+06| 1.353123e+06 -8.794853e+04| 0:0:00| chol 1✓
1
42|1.000|1.000|5.1e-09|1.2e-08|3.6e+05| 3.297791e+05 -2.669263e+04| 0:0:00| chol 1✓
1
43|1.000|1.000|4.7e-09|1.0e-09|1.7e+05| 1.616541e+05 -1.234336e+04| 0:0:00| chol 1✓
1
44|1.000|1.000|3.9e-10|9.4e-10|4.9e+04| 4.426470e+04 -4.701497e+03| 0:0:00| chol 1✓
1
45|1.000|1.000|5.4e-10|7.8e-11|2.4e+04| 2.184639e+04 -2.034537e+03| 0:0:00| chol 1✓
1
46|1.000|1.000|1.0e-09|1.1e-10|8.9e+03| 7.890378e+03 -1.027563e+03| 0:0:00| chol 1✓
1
47|1.000|1.000|2.7e-11|1.6e-10|3.8e+03| 3.354707e+03 -4.267530e+02| 0:0:00| chol 1✓
1
48|1.000|1.000|3.3e-12|5.3e-12|1.4e+03| 1.188353e+03 -2.121138e+02| 0:0:00| chol 1✓
1
49|1.000|1.000|6.9e-11|1.0e-12|6.0e+02| 5.017867e+02 -9.546763e+01| 0:0:00| chol 1✓
1
50|1.000|1.000|2.8e-11|1.5e-12|2.1e+02| 1.550490e+02 -5.343451e+01| 0:0:00|
sqlp stop: maximum number of iterations reached

```

```

-----
number of iterations    = 50
primal objective value =  8.92114215e+06
dual   objective value = -1.47560816e+05
gap := trace(XZ)       = 1.07e+07
relative gap           = 1.18e+00
actual relative gap    = 1.00e+00
rel. primal infeas     = 1.18e-08
rel. dual   infeas     = 1.18e+00
norm(X), norm(y), norm(Z) = 1.1e+06, 1.5e+05, 2.1e+05
norm(A), norm(b), norm(C) = 3.2e+05, 5.0e+04, 7.7e+01
Total CPU time (secs)   = 0.26
CPU time per iteration = 0.01
termination code        = -6
DIMACS errors: 2.5e-08  0.0e+00  1.7e+00  0.0e+00  1.0e+00  1.2e+00
-----

```

ans =

6.8235e+06

Iteration 7 Total error is: 16.5521

```

num. of constraints = 25
dim. of socp var   = 26,   num. of socp blk = 1
dim. of linear var = 800

```

```

*****
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	1.0e+01	5.2e+06	9.033954e+04	0.000000e+00	0:0:00	chol 1✓
1									
1	1	0.921	0.919	7.9e-02	1.0e+00	5.5e+05	8.563813e+04	-8.121357e+00	0:0:00 chol 1✓
1									
2	0.895	0.872	8.3e-03	2.1e-01	2.2e+05	1.041626e+05	-1.298604e+02	0:0:00	chol 1✓
1									
3	1.000	1.000	4.1e-08	4.6e-02	5.9e+04	4.717839e+04	-1.946546e+02	0:0:00	chol 1✓
1									
4	0.969	0.990	1.3e-07	1.4e-02	2.7e+03	2.304226e+03	-1.574532e+02	0:0:00	chol 1✓
1									
5	0.427	0.809	1.3e-07	3.8e-03	2.3e+03	2.167556e+03	-8.388300e+01	0:0:00	chol 1✓
1									
6	0.673	1.000	4.3e-08	1.4e-04	1.7e+03	1.663542e+03	-6.782288e+01	0:0:00	chol 1✓
1									
7	1.000	1.000	2.4e-10	1.4e-05	8.7e+02	8.251324e+02	-4.176611e+01	0:0:00	chol 1✓
1									
8	1.000	1.000	1.1e-10	1.4e-06	4.4e+02	4.011973e+02	-3.567714e+01	0:0:00	chol 1✓
1									
9	1.000	1.000	1.6e-11	1.4e-07	1.8e+02	1.591656e+02	-2.419671e+01	0:0:00	chol 1✓
1									
10	1.000	1.000	5.9e-14	1.4e-08	7.3e+01	5.246847e+01	-2.086786e+01	0:0:00	chol 1✓
1									
11	1.000	1.000	3.0e-14	1.4e-09	3.1e+01	1.237899e+01	-1.816721e+01	0:0:00	chol 1✓
1									
12	1.000	1.000	3.6e-14	1.4e-10	9.7e+00	-7.404695e+00	-1.709392e+01	0:0:00	chol 1✓
1									
13	1.000	1.000	1.9e-14	1.5e-11	4.3e+00	-1.215478e+01	-1.649635e+01	0:0:00	chol 1✓
1									
14	1.000	1.000	7.5e-14	2.4e-12	1.5e+00	-1.472494e+01	-1.624645e+01	0:0:00	chol 1✓
1									
15	1.000	1.000	7.1e-13	1.1e-12	6.2e-01	-1.550394e+01	-1.612452e+01	0:0:00	chol 1✓
1									
16	1.000	1.000	1.1e-13	1.0e-12	1.7e-01	-1.589880e+01	-1.606721e+01	0:0:00	chol 1✓
1									
17	1.000	1.000	8.3e-12	1.0e-12	5.8e-02	-1.599275e+01	-1.605029e+01	0:0:00	chol 1✓
1									
18	1.000	0.901	8.0e-12	1.6e-12	1.1e-02	-1.603299e+01	-1.604416e+01	0:0:00	chol 1✓
2									
19	0.916	0.971	8.7e-13	1.6e-12	3.4e-03	-1.603916e+01	-1.604255e+01	0:0:00	chol 1✓
2									
20	0.949	0.985	1.9e-12	1.0e-12	6.0e-04	-1.604158e+01	-1.604218e+01	0:0:00	chol 2✓
2									
21	0.986	1.000	1.8e-11	1.0e-12	1.8e-04	-1.604195e+01	-1.604214e+01	0:0:00	chol 2✓
2									
22	1.000	1.000	4.3e-11	1.5e-12	6.5e-05	-1.604206e+01	-1.604212e+01	0:0:00	chol 2✓
2									
23	0.990	1.000	1.3e-11	2.2e-12	9.0e-06	-1.604210e+01	-1.604211e+01	0:0:00	chol 3✓
3									
24	1.000	0.885	9.0e-11	2.8e-12	5.6e-06	-1.604211e+01	-1.604211e+01	0:0:00	chol 2✓



```
3
25|0.857|1.000|2.2e-11|3.9e-12|2.5e-06|-1.604211e+01 -1.604211e+01| 0:0:00|
stop: max(relative gap, infeasibilities) < 1.00e-07
```

```
-----
number of iterations    = 25
primal objective value = -1.60421094e+01
dual   objective value = -1.60421119e+01
gap := trace(XZ)        = 2.53e-06
relative gap            = 7.64e-08
actual relative gap     = 7.64e-08
rel. primal infeas      = 2.22e-11
rel. dual   infeas      = 3.87e-12
norm(X), norm(y), norm(Z) = 2.5e+01, 8.6e+01, 5.4e+01
norm(A), norm(b), norm(C) = 1.6e+02, 3.0e+02, 7.7e+01
Total CPU time (secs)    = 0.11
CPU time per iteration   = 0.00
termination code         = 0
DIMACS errors: 5.4e-11  0.0e+00  5.5e-12  0.0e+00  7.6e-08  7.6e-08
-----
```

```
ans =
```

```
16.0421
```

```
Iteration    8    Total error is: 0.033824
The total representation error of the testing signals is: 0.028755
>>
```