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## Installation

download and install

```
clear; close all;
cd ./simu_functions/
addpath(genpath(pwd))
cd ../..
addpath(genpath(pwd))
cd ../../../../pqn11;
addpath(genpath(pwd))

cd ../experiments/help_spg11/modifying/task11lasso/seismic
rmpath('/Volumes/Users/linamiao/Dropbox/PQN/pqn11/minConF/')
```

## Data

Number of time samples

```
nt = 1024;
% Number of sources
ns = 178;
% Number of receivers
nr = 178;

% Time sampling interval
dt = 0.004;

% Read data
D = ReadSuFast('GulfOfSuez178.su');
D = reshape(D,nt,nr,ns);

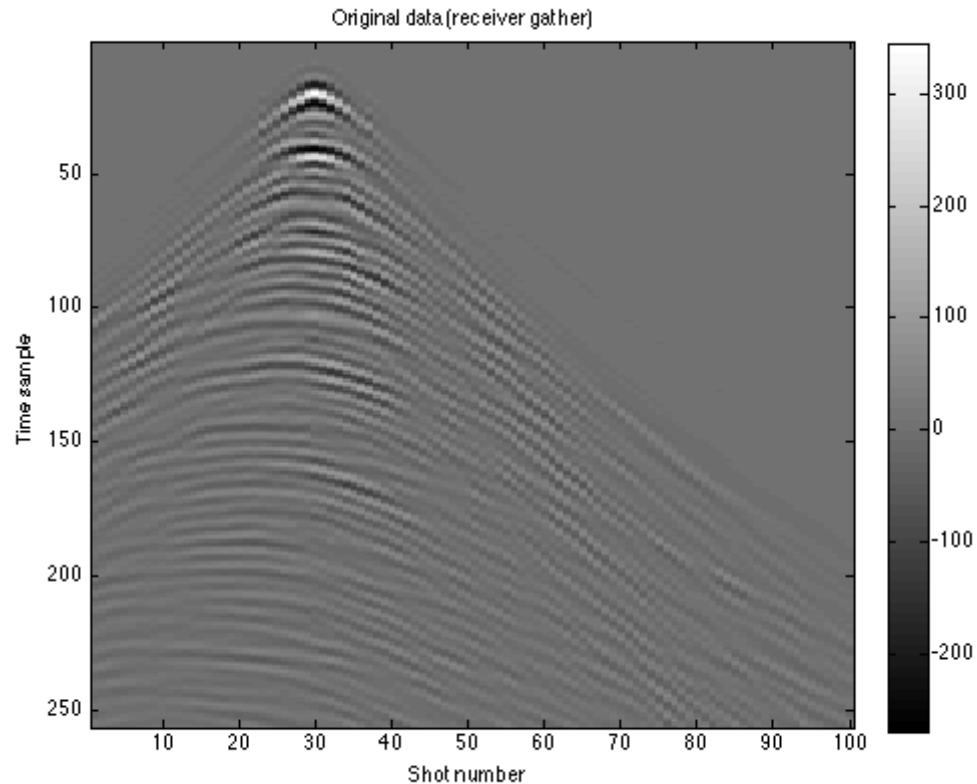
% Select small subset
D = D(1:256,30,1:100);

% Define new data sizes
[nt,nr,ns] = size(D);
```

---

```
% Vectorize D
D = D(:);

% Display
figure
imagesc(reshape(D,nt,ns)); colormap(gray); colorbar;
title('Original data (receiver gather)');
xlabel('Shot number'); ylabel('Time sample')
```

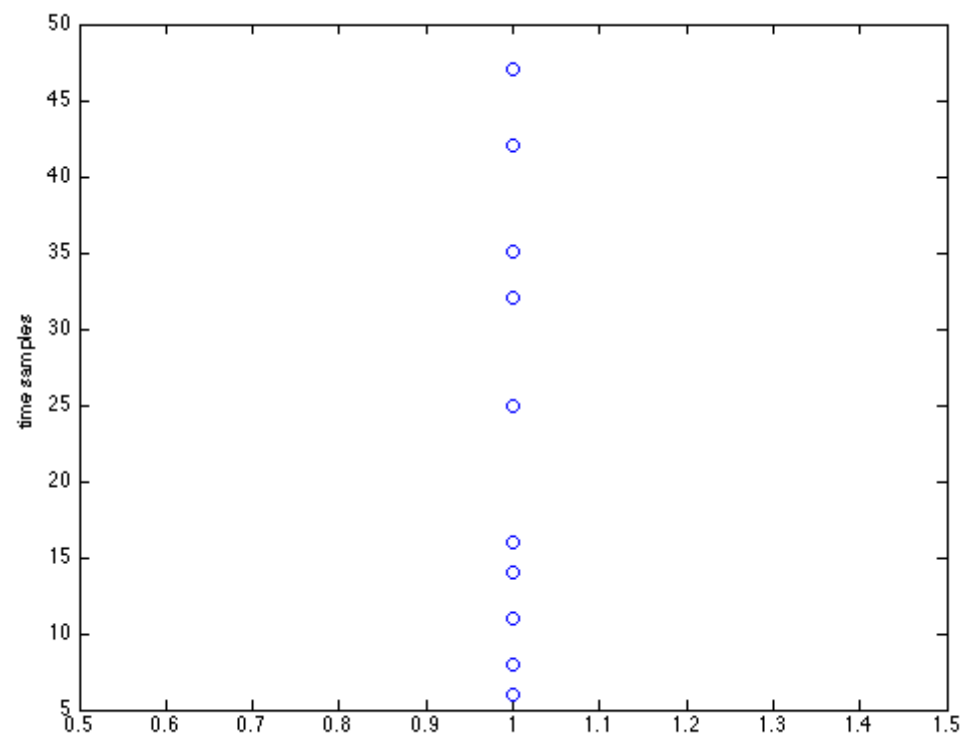
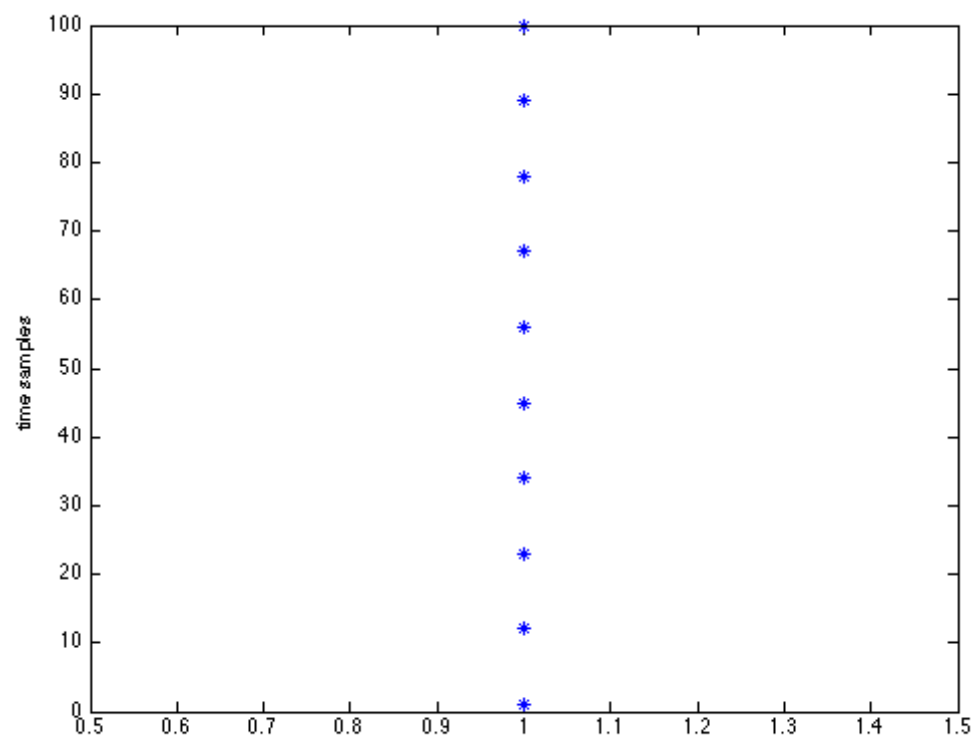


## Set the patameters for randomized experiment

```
I = eye(10);
RM1 = opSimSourceRandTimeDither([10 1 10], [5*10 1], 10);

% plot very long time series
figure;
plot(I(:,1:length(I(:))), '*');xlim([0.5 1.5]);ylabel('time samples');

% plot compressed series
figure;
plot(RM1*I(:,1:length(RM1*I(:))), 'o');xlim([0.5 1.5]);ylabel('time samples');
```



---

Construct the sampling operator RM for  $p = 0.5$  that works on the vectorized version of the data using `opSimSourceRandTimeDither`.

```
p = .5;
D_RM1 = opSimSourceRandTimeDither([nt,nr,ns],[p*nt*ns,1],ns);
```

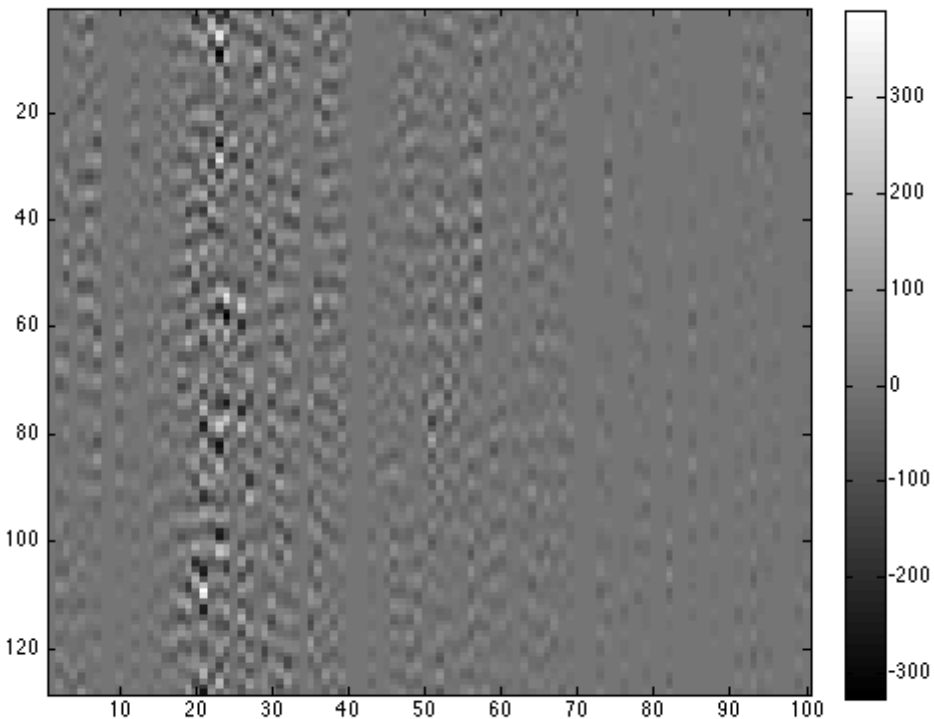
```
% Test the sampling operator with the dottest.
```

```
x_test = rand(size(D_RM1,2),1);
y_test = rand(size(D_RM1,1),1);
left = y_test'*(D_RM1*x_test);
right = (D_RM1'*y_test)'*x_test;
error = norm(left-right);
fprintf('In dottest error:%5.5e\n',error);
```

```
In dottest error:1.81899e-12
```

Generate simultaneous data `simD` and display the result.

```
simD1 = D_RM1*D;
figure;
imagesc(reshape(simD1,p*nt,ns)); colormap(gray); colorbar;
```



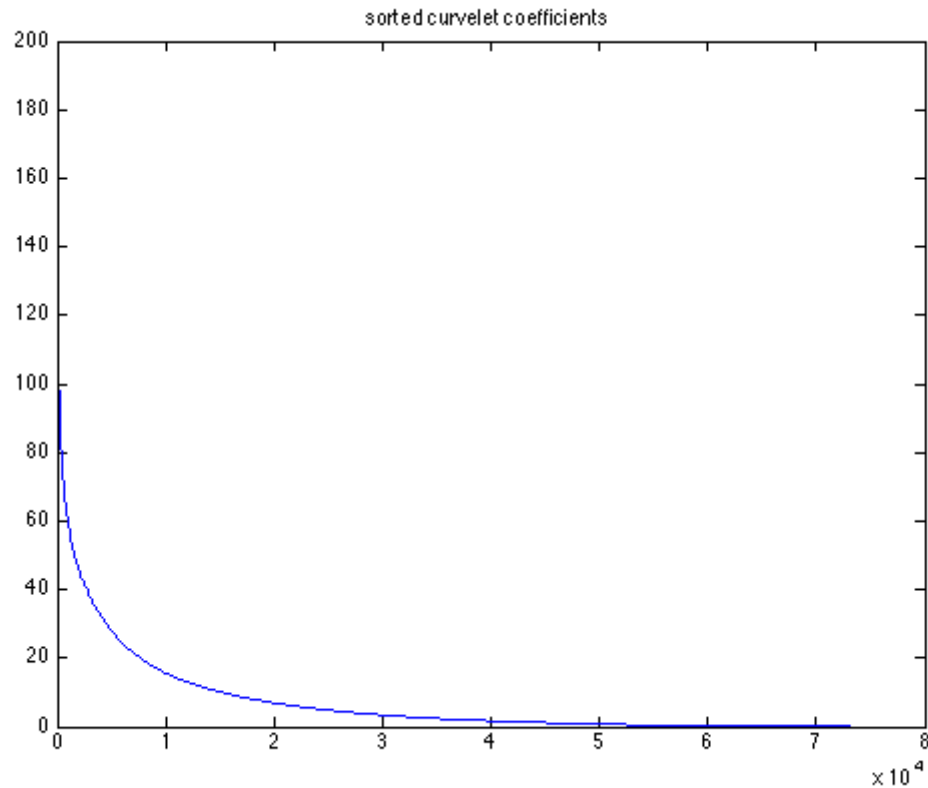
## sparsifying transform

Use this to create a Curvelet SPOT operator:

```
C = opCurvelet(nt, ns);
```

---

```
% Transform the data into the Curvelet domain and plot the sorted coefficients
C_D = C*D;
sort_CD = sort(abs(C_D),'descend');
figure;plot(sort_CD);title('sorted curvelet coefficients')
```



## exercises

Construct the measurement operator A. HINT: See 'Constructing a suitable matrix' in Lab 7. Using spg11, estimate the curvelet coefficients xest.

```
fid = fopen('log.txt', 'w');
p_list = [.5];

p = p_list;
D_RM1 = opSimSourceRandTimeDither([nt,nr,ns],[p*nt*ns,1],ns);
simD1 = D_RM1*D;
A = D_RM1*C';

options = spgSetParms('optTol', 1e-4, 'iterations', 1000);%, 'fid', fid);
xestspg = spg11(A,simD1,0,1e-3,[],options);
tau = norm(xestspg,1);
%tau = 2.2072179e+05;

options = spgSetParms('optTol', 1e-4, 'iterations', 200);%, 'fid', fid);
xinit = zeros(size(A,2),1);
```

---

```

which spgll
%keyboard;
xestspg = spgll(A,simD1,tau,[],xinit,options);
%options.iterations = 100;
xestpgn = pgnll_2(A,simD1,tau,[],xinit,options);
fspg = C'*xestspg;
snrspg = SNR(D,fspg);
fpgn = C'*xestpgn;
snrpgn = SNR(D,fpgn);

```

```

figure;
subplot(1,2,1);imagesc(reshape(fspg,nt,ns)); colormap(gray);
title(strcat(['p = .5, SNR=' num2str(snrspg(1)) 'dB']))
subplot(1,2,2);imagesc(reshape(fspg-D,nt,ns)); colormap(gray);
title('difference')

```

```

figure;
subplot(1,2,1);imagesc(reshape(fpgn,nt,ns)); colormap(gray);
title(strcat(['p = .5, SNR=' num2str(snrpgn(1)) 'dB']))
subplot(1,2,2);imagesc(reshape(fpgn-D,nt,ns)); colormap(gray);
title('difference')

```

---

SPGL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

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No. rows	:	12800	No. columns	:	73051
Initial tau	:	0.00e+00	Two-norm of b	:	4.14e+03
Optimality tol	:	1.00e-04	Target objective	:	1.00e-03
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	1000

Iter	Objective	Relative Gap	Rel Error	gNorm	stepG	nnzX
0	4.1432961e+03	0.0000000e+00	1.00e+00	2.309e+02	0.0	0
1	4.0961177e+03	2.1685423e+00	1.00e+00	2.427e+02	-0.3	1
2	3.8409011e+03	7.2466940e+00	1.00e+00	6.091e+02	-0.3	767
3	4.0056751e+03	8.1738009e+00	1.00e+00	8.406e+02	0.0	2589
4	2.7844227e+03	5.4859630e+00	1.00e+00	3.045e+02	0.0	5274
5	2.5585611e+03	7.5780262e-01	1.00e+00	7.020e+01	0.0	5423
6	2.5116439e+03	6.6719129e-01	1.00e+00	6.613e+01	0.0	4391
7	2.4341020e+03	1.6787980e+00	1.00e+00	1.087e+02	0.0	2633
8	2.4714377e+03	6.9769315e+00	1.00e+00	3.193e+02	0.0	2102
9	2.4812292e+03	1.0796443e+01	1.00e+00	4.844e+02	0.0	2367
10	2.4042372e+03	2.6815780e+00	1.00e+00	1.448e+02	0.0	2335
11	2.3927197e+03	2.9326255e-01	1.00e+00	5.241e+01	0.0	2239
12	2.3906328e+03	2.8631505e-01	1.00e+00	5.213e+01	0.0	2169
13	2.3762086e+03	1.2376699e+00	1.00e+00	8.794e+01	0.0	1755
14	2.3730586e+03	1.2293175e+00	1.00e+00	8.765e+01	-0.3	1824
15	2.3712050e+03	1.5821600e+00	1.00e+00	1.008e+02	0.0	1786
16	2.3696474e+03	1.1915189e+00	1.00e+00	8.619e+01	0.0	1767

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17	2.3680913e+03	5.2279930e-01	1.00e+00	6.088e+01	0.0	1751
18	2.3672053e+03	1.6109036e-01	1.00e+00	4.727e+01	0.0	1739
19	2.3648570e+03	1.7509320e-01	1.00e+00	4.773e+01	0.0	1689
20	2.3607905e+03	2.6897986e+00	1.00e+00	1.407e+02	0.0	1291
21	2.3585699e+03	1.3836679e+00	1.00e+00	9.190e+01	-0.3	1377
22	2.3534329e+03	1.1473306e+00	1.00e+00	8.329e+01	0.0	1480
23	2.3521754e+03	4.4652350e-01	1.00e+00	5.727e+01	0.0	1457
24	2.3512531e+03	1.6775011e-01	1.00e+00	4.702e+01	0.0	1441
25	2.3499758e+03	1.6644218e-01	1.00e+00	4.720e+01	0.0	1420
26	2.3492158e+03	6.5088079e-01	1.00e+00	6.504e+01	0.0	1407
27	2.3493836e+03	1.2361213e+00	1.00e+00	8.697e+01	-0.3	1408
28	2.3487162e+03	6.7749667e-01	1.00e+00	6.611e+01	0.0	1419
29	2.3482340e+03	1.9649976e-01	1.00e+00	4.834e+01	0.0	1421
30	2.3481085e+03	9.8254874e-02	1.00e+00	4.468e+01	0.0	1412
31	2.3477358e+03	9.7636183e-02	1.00e+00	4.463e+01	0.0	1401
32	2.3464729e+03	1.2835607e+00	1.00e+00	8.822e+01	0.0	1297
33	2.3460015e+03	6.1099655e-01	1.00e+00	6.330e+01	-0.3	1340
34	2.3450952e+03	4.6490877e-01	1.00e+00	5.806e+01	0.0	1363
35	2.3448796e+03	1.0530065e-01	1.00e+00	4.477e+01	0.0	1353
36	2.3447830e+03	8.6060917e-02	1.00e+00	4.407e+01	0.0	1341
37	1.5062561e+03	1.8047323e+01	1.00e+00	9.031e+01	0.0	6005
38	1.3337187e+03	2.9817262e+01	1.00e+00	1.451e+02	0.0	19786
39	9.0901189e+02	2.8642910e+01	1.00e+00	6.430e+01	0.0	20864
40	8.2159202e+02	5.4642623e+00	1.00e+00	1.653e+01	0.0	20497
41	7.9783048e+02	5.0156054e+00	1.00e+00	1.522e+01	0.0	17723
42	7.5203671e+02	1.0641867e+01	1.00e+00	2.329e+01	0.0	12985
43	8.0126295e+02	5.6044512e+01	1.00e+00	9.547e+01	0.0	10794
44	7.8636209e+02	7.6470296e+01	1.00e+00	1.266e+02	0.0	12659
45	7.2362533e+02	2.6204336e+01	1.00e+00	4.181e+01	0.0	12202
46	7.1690923e+02	2.5528227e+00	1.00e+00	1.074e+01	0.0	11500
47	7.1428775e+02	2.5634379e+00	1.00e+00	1.073e+01	0.0	10995
48	7.0267604e+02	2.3807174e+01	1.00e+00	3.700e+01	0.0	9372
49	6.9977735e+02	1.2358902e+01	1.00e+00	2.264e+01	-0.3	9557
50	6.9771217e+02	9.1851368e+00	1.00e+00	1.867e+01	0.0	9475
51	6.9635474e+02	2.9539989e+00	1.00e+00	1.101e+01	0.0	9347
52	6.9416605e+02	9.0418408e+00	1.00e+00	1.834e+01	0.0	9166
53	6.9699897e+02	6.2144752e+01	1.00e+00	8.307e+01	0.0	8632
54	6.8889009e+02	2.1371816e+00	1.00e+00	9.898e+00	-0.3	8718
55	6.8749379e+02	2.0972776e+00	1.00e+00	9.834e+00	0.0	8692
56	6.8530598e+02	5.4334676e+00	1.00e+00	1.375e+01	0.0	8469
57	6.8737375e+02	5.6492407e+01	1.00e+00	7.417e+01	0.0	7954
58	6.8035692e+02	6.6972712e+00	1.00e+00	1.507e+01	-0.3	8142
59	6.7844345e+02	2.7941162e+00	1.00e+00	1.051e+01	0.0	8129
60	6.7766466e+02	1.6935526e+00	1.00e+00	9.245e+00	0.0	8038
61	6.7570112e+02	3.6728724e+00	1.00e+00	1.149e+01	0.0	7857
62	6.7471271e+02	2.1728098e+01	1.00e+00	3.205e+01	-0.3	7661
63	6.7306357e+02	5.4639586e+00	1.00e+00	1.346e+01	-0.3	7750
64	6.7229391e+02	3.7198533e+00	1.00e+00	1.146e+01	0.0	7734
65	6.7179201e+02	1.6687547e+00	1.00e+00	9.138e+00	0.0	7691
66	6.7082515e+02	5.1640351e+00	1.00e+00	1.308e+01	0.0	7597
67	6.7089565e+02	2.6535446e+01	1.00e+00	3.720e+01	-0.3	7475
68	6.7158340e+02	3.3654679e+01	1.00e+00	4.534e+01	-0.3	7485
69	6.6872860e+02	4.6497796e+00	1.00e+00	1.244e+01	0.0	7480
70	6.6848565e+02	1.5333395e+00	1.00e+00	8.943e+00	0.0	7458

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71	6.6802576e+02	1.5078567e+00	1.00e+00	8.912e+00	0.0	7424
72	6.6304781e+02	1.3080780e+01	1.00e+00	2.159e+01	0.0	7004
73	6.6557125e+02	3.4485340e+01	1.00e+00	4.550e+01	-0.3	7136
74	6.6395699e+02	2.9426941e+01	1.00e+00	3.975e+01	0.0	7227
75	6.6183817e+02	3.4920478e+00	1.00e+00	1.102e+01	0.0	7191
76	6.6166956e+02	1.0821675e+00	1.00e+00	8.368e+00	0.0	7165
77	6.6131559e+02	1.7109007e+00	1.00e+00	9.051e+00	0.0	7111
78	6.5971493e+02	1.6780473e+01	1.00e+00	2.544e+01	0.0	6819
79	6.5926148e+02	8.7297652e+00	1.00e+00	1.665e+01	-0.3	6909
80	6.5852106e+02	5.1362073e+00	1.00e+00	1.272e+01	0.0	6922
81	6.5833127e+02	2.9694805e+00	1.00e+00	1.037e+01	0.0	6904
82	6.5802749e+02	1.9689587e+00	1.00e+00	9.278e+00	0.0	6874
83	6.5778792e+02	2.1805204e+01	1.00e+00	3.083e+01	-0.3	6791
84	6.5720773e+02	2.9533993e+00	1.00e+00	1.033e+01	-0.3	6830
85	6.5706520e+02	3.4584785e+00	1.00e+00	1.088e+01	0.0	6829
86	6.5687349e+02	1.6144861e+00	1.00e+00	8.881e+00	0.0	6809
87	6.5599620e+02	6.8374242e+00	1.00e+00	1.450e+01	0.0	6696
88	6.5576268e+02	6.3877143e+00	1.00e+00	1.402e+01	-0.3	6729
89	6.5558214e+02	5.9431216e+00	1.00e+00	1.353e+01	0.0	6719
90	6.5543353e+02	1.9938550e+00	1.00e+00	9.272e+00	0.0	6709
91	6.5531090e+02	1.3150330e+00	1.00e+00	8.535e+00	0.0	6693
92	6.5454888e+02	6.5390754e+00	1.00e+00	1.415e+01	0.0	6622
93	6.5454420e+02	1.2450817e+01	1.00e+00	2.049e+01	-0.3	6635
94	4.6192331e+02	3.0327191e+01	1.00e+00	1.868e+01	0.0	19293
95	4.5061941e+02	3.8902048e+01	1.00e+00	2.220e+01	0.0	16635
96	4.4737322e+02	4.7801058e+01	1.00e+00	2.601e+01	0.0	14339
97	4.4562793e+02	4.9250677e+01	1.00e+00	2.649e+01	0.0	13191
98	4.4381874e+02	1.7626174e+01	1.00e+00	1.217e+01	0.0	12652
99	4.4305299e+02	6.3336860e+00	1.00e+00	7.108e+00	0.0	12271
100	4.4212418e+02	4.4024055e+00	1.00e+00	6.245e+00	0.0	11723
101	4.3945448e+02	2.9731163e+01	1.00e+00	1.739e+01	0.0	9543
102	4.3958066e+02	4.2797228e+01	1.00e+00	2.315e+01	-0.3	9689
103	4.3846798e+02	1.8883874e+01	1.00e+00	1.259e+01	0.0	9645
104	4.3820680e+02	2.1013509e+00	1.00e+00	5.257e+00	0.0	9580
105	4.3802370e+02	2.4080545e+00	1.00e+00	5.388e+00	0.0	9508
106	4.3734775e+02	5.7461735e+01	1.00e+00	2.931e+01	0.0	8447
107	4.3643937e+02	2.8676870e+01	1.00e+00	1.676e+01	-0.3	8616
108	4.3563174e+02	1.0799532e+01	1.00e+00	9.009e+00	0.0	8618
109	4.3546533e+02	5.1469097e+00	1.00e+00	6.572e+00	0.0	8585
110	4.3514488e+02	4.0803082e+00	1.00e+00	6.115e+00	0.0	8490
111	4.3467627e+02	8.7780430e+00	1.00e+00	8.132e+00	0.0	8356
112	4.3493631e+02	3.7967191e+01	1.00e+00	2.068e+01	-0.3	8307
113	4.3481299e+02	3.1306824e+01	1.00e+00	1.781e+01	-0.3	8336
114	4.3425023e+02	6.0510970e+00	1.00e+00	6.954e+00	0.0	8325
115	4.3418552e+02	2.5373808e+00	1.00e+00	5.449e+00	0.0	8301
116	4.3402854e+02	3.0873039e+00	1.00e+00	5.683e+00	0.0	8258
117	4.3344745e+02	5.4081824e+01	1.00e+00	2.746e+01	0.0	7889
118	4.3278989e+02	1.0326202e+01	1.00e+00	8.762e+00	-0.3	8010
119	4.3248872e+02	1.1089069e+01	1.00e+00	9.079e+00	0.0	7998
120	4.3241040e+02	6.3162676e+00	1.00e+00	7.050e+00	0.0	7979
121	4.3221164e+02	1.1190224e+00	1.00e+00	4.843e+00	0.0	7939
122	4.3191859e+02	4.7389689e+00	1.00e+00	6.374e+00	0.0	7879
123	4.3182869e+02	8.7240413e+00	1.00e+00	8.059e+00	-0.3	7901
124	4.3177771e+02	1.2747091e+01	1.00e+00	9.770e+00	0.0	7892

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125	4.3167941e+02	8.6710548e+00	1.00e+00	8.033e+00	0.0	7886
126	4.3160915e+02	3.3986580e+00	1.00e+00	5.805e+00	0.0	7879
127	4.3156242e+02	1.1811705e+00	1.00e+00	4.864e+00	0.0	7866
128	4.3135189e+02	2.9437448e+00	1.00e+00	5.609e+00	0.0	7837
129	4.3127642e+02	2.3315420e+01	1.00e+00	1.420e+01	-0.3	7839
130	4.3105399e+02	2.6338231e+00	1.00e+00	5.473e+00	-0.3	7884
131	4.3097245e+02	5.3284828e+00	1.00e+00	6.610e+00	0.0	7851
132	4.3092535e+02	1.4912322e+00	1.00e+00	4.993e+00	0.0	7826
133	4.3079882e+02	1.3205003e+00	1.00e+00	4.920e+00	0.0	7780
134	4.3039117e+02	3.3945641e+01	1.00e+00	1.863e+01	-0.3	7650
135	4.2998597e+02	8.7449439e+00	1.00e+00	8.027e+00	-0.3	7741
136	4.2980802e+02	9.1598018e+00	1.00e+00	8.199e+00	0.0	7733
137	4.2974378e+02	3.5728849e+00	1.00e+00	5.856e+00	0.0	7709
138	4.2966196e+02	3.7201207e+00	1.00e+00	5.919e+00	0.0	7685
139	4.2950885e+02	1.4375545e+01	1.00e+00	1.038e+01	0.0	7639
140	4.2942249e+02	4.1067919e+00	1.00e+00	6.076e+00	-0.3	7674
141	4.2938128e+02	2.5445279e+00	1.00e+00	5.425e+00	0.0	7654
142	4.2933339e+02	1.0958784e+00	1.00e+00	4.816e+00	0.0	7641
143	4.2906033e+02	7.6324484e+00	1.00e+00	7.553e+00	0.0	7608
144	4.2913114e+02	1.9161844e+01	1.00e+00	1.236e+01	-0.3	7631
145	4.2903941e+02	1.5074777e+01	1.00e+00	1.067e+01	0.0	7639
146	4.2892319e+02	5.1667008e+00	1.00e+00	6.515e+00	0.0	7631
147	4.2889585e+02	1.0803771e+00	1.00e+00	4.808e+00	0.0	7625
148	4.2885878e+02	1.0800106e+00	1.00e+00	4.807e+00	0.0	7612
149	4.2821675e+02	2.3123597e+01	1.00e+00	1.397e+01	0.0	7487
150	4.2861584e+02	3.9650155e+01	1.00e+00	2.091e+01	-0.3	7542
151	4.2807680e+02	1.2383439e+01	1.00e+00	9.506e+00	0.0	7572
152	4.2797870e+02	1.0899063e+00	1.00e+00	4.805e+00	0.0	7550
153	4.2795329e+02	1.2498568e+00	1.00e+00	4.871e+00	0.0	7538
154	4.2780567e+02	1.0155128e+01	1.00e+00	8.573e+00	0.0	7507
155	4.2778601e+02	1.1205398e+01	1.00e+00	9.005e+00	-0.3	7525
156	2.6767645e+02	2.6482032e+01	1.00e+00	5.889e+00	0.0	31986
157	2.5184698e+02	3.4627819e+01	1.00e+00	6.720e+00	0.0	26673
158	2.4560272e+02	3.2313713e+01	1.00e+00	6.166e+00	0.0	21674
159	2.4154542e+02	1.0761626e+02	1.00e+00	1.520e+01	0.0	17211
160	2.4110251e+02	1.5439430e+02	1.00e+00	2.079e+01	-0.3	16370
161	2.3862193e+02	6.9863822e+01	1.00e+00	1.039e+01	0.0	15981
162	2.3790883e+02	6.2206260e+00	1.00e+00	2.848e+00	0.0	15602
163	2.3742299e+02	8.5122021e+00	1.00e+00	3.113e+00	0.0	15191
164	2.3466153e+02	6.9897726e+01	1.00e+00	1.016e+01	0.0	11946
165	2.3442687e+02	1.0466533e+02	1.00e+00	1.411e+01	-0.3	12233
166	2.3362476e+02	6.4475374e+01	1.00e+00	9.455e+00	0.0	12178
167	2.3329758e+02	3.2425105e+00	1.00e+00	2.500e+00	0.0	12103
168	2.3316640e+02	9.1256634e+00	1.00e+00	3.162e+00	0.0	12007
169	2.3244338e+02	6.7826019e+01	1.00e+00	9.735e+00	0.0	11217
170	2.3235151e+02	6.1587300e+01	1.00e+00	9.034e+00	-0.3	11293
171	2.3204708e+02	2.3185459e+01	1.00e+00	4.716e+00	0.0	11252
172	2.3196129e+02	3.4616026e+00	1.00e+00	2.507e+00	0.0	11192
173	2.3186285e+02	6.8814209e+00	1.00e+00	2.890e+00	0.0	11119
174	2.3131695e+02	8.3407562e+01	1.00e+00	1.142e+01	0.0	10511
175	2.3106468e+02	3.2078077e+01	1.00e+00	5.702e+00	-0.3	10612
176	2.3086118e+02	1.6464931e+01	1.00e+00	3.962e+00	0.0	10582
177	2.3079428e+02	9.2018419e+00	1.00e+00	3.155e+00	0.0	10562
178	2.3057078e+02	2.2385015e+01	1.00e+00	4.606e+00	0.0	10425

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179	2.3078087e+02	8.4809854e+01	1.00e+00	1.153e+01	-0.3	10357
180	2.3071877e+02	7.1832853e+01	1.00e+00	1.009e+01	0.0	10344
181	2.3032997e+02	6.8121675e+00	1.00e+00	2.882e+00	0.0	10320
182	2.3030305e+02	2.7080276e+00	1.00e+00	2.429e+00	0.0	10296
183	2.3015768e+02	7.8165742e+00	1.00e+00	2.993e+00	0.0	10222
184	2.3001362e+02	6.6556260e+01	1.00e+00	9.451e+00	-0.3	10014
185	2.3002578e+02	5.0345306e+01	1.00e+00	7.677e+00	-0.3	10061
186	2.2968186e+02	1.7781678e+01	1.00e+00	4.085e+00	0.0	10045
187	2.2964829e+02	5.7436406e+00	1.00e+00	2.764e+00	0.0	10033
188	2.2960205e+02	3.7740363e+00	1.00e+00	2.549e+00	0.0	10009
189	2.2922020e+02	1.4146340e+01	1.00e+00	3.683e+00	0.0	9805
190	2.2953022e+02	8.2570903e+01	1.00e+00	1.119e+01	-0.3	9852
191	2.2952630e+02	6.2410798e+01	1.00e+00	8.974e+00	-0.3	9904
192	1.8303683e+02	3.0364644e+01	1.00e+00	3.597e+00	0.0	34803
193	1.7865535e+02	1.9307842e+01	1.00e+00	2.783e+00	0.0	21989
194	1.7692573e+02	9.6886592e+01	1.00e+00	7.703e+00	0.0	15216
195	1.8152099e+02	4.2641045e+02	1.00e+00	3.007e+01	0.0	13176
196	1.7657171e+02	1.3857421e+02	1.00e+00	1.032e+01	0.0	13175
197	1.7589800e+02	5.2005664e+00	1.00e+00	1.872e+00	0.0	12963
198	1.7583093e+02	5.8940049e+00	1.00e+00	1.917e+00	0.0	12767
199	1.7537483e+02	1.7103613e+01	1.00e+00	2.637e+00	0.0	11604
200	1.7524917e+02	1.5388525e+01	1.00e+00	2.521e+00	-0.3	11705
201	1.7516670e+02	3.0380338e+01	1.00e+00	3.458e+00	0.0	11488
202	1.7511918e+02	2.4039601e+01	1.00e+00	3.060e+00	0.0	11394
203	1.7505439e+02	2.7157245e+01	1.00e+00	3.254e+00	0.0	11310
204	1.7501301e+02	4.2437107e+00	1.00e+00	1.828e+00	0.0	11248
205	1.7497399e+02	1.2535328e+01	1.00e+00	2.345e+00	0.0	11202
206	1.7489255e+02	2.4129293e+01	1.00e+00	3.064e+00	0.0	11062
207	1.7496281e+02	1.0567234e+02	1.00e+00	8.141e+00	0.0	10896
208	1.7480744e+02	4.4166356e+01	1.00e+00	4.310e+00	-0.3	10890
209	1.7471063e+02	9.9806280e+00	1.00e+00	2.188e+00	0.0	10876
210	1.7469132e+02	5.2274275e+00	1.00e+00	1.894e+00	0.0	10859
211	1.7447127e+02	1.5098933e+01	1.00e+00	2.506e+00	0.0	10668
212	1.7439085e+02	4.7938005e+01	1.00e+00	4.540e+00	-0.3	10674
213	1.7456046e+02	1.1717895e+02	1.00e+00	8.821e+00	-0.3	10618
214	1.7430611e+02	4.2319292e+01	1.00e+00	4.187e+00	0.0	10635
215	1.7424611e+02	3.4848284e+00	1.00e+00	1.791e+00	0.0	10602
216	1.7423094e+02	5.0260828e+00	1.00e+00	1.886e+00	0.0	10582
217	1.7412581e+02	5.8476764e+00	1.00e+00	1.936e+00	0.0	10486
218	1.7399847e+02	5.1081412e+01	1.00e+00	4.726e+00	-0.3	10489
219	1.7400613e+02	5.6390915e+01	1.00e+00	5.042e+00	-0.3	10551
220	1.2910035e+02	4.5383514e+01	1.00e+00	2.497e+00	0.0	37205
221	1.2471899e+02	4.9275988e+01	1.00e+00	2.537e+00	0.0	25736
222	1.2288448e+02	1.2146812e+02	1.00e+00	4.656e+00	0.0	19068
223	1.2477006e+02	5.3654717e+02	1.00e+00	1.758e+01	0.0	15730
224	1.2328239e+02	4.2817704e+02	1.00e+00	1.393e+01	0.0	15609
225	1.2157311e+02	1.4771814e+01	1.00e+00	1.458e+00	0.0	15300
226	1.2149804e+02	8.2626962e+00	1.00e+00	1.268e+00	0.0	15073
227	1.2095993e+02	1.6120774e+01	1.00e+00	1.499e+00	0.0	13500
228	1.2113219e+02	1.3462869e+02	1.00e+00	4.953e+00	-0.3	12666
229	1.2124111e+02	1.9578276e+02	1.00e+00	6.744e+00	-0.3	12947
230	1.2055111e+02	8.4088439e+01	1.00e+00	3.460e+00	0.0	12816
231	1.2043753e+02	7.5208303e+00	1.00e+00	1.254e+00	0.0	12676
232	1.2040720e+02	1.2452280e+01	1.00e+00	1.396e+00	0.0	12593

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233	1.2019056e+02	5.1800757e+01	1.00e+00	2.523e+00	0.0	12142
234	1.2013311e+02	4.3139388e+01	1.00e+00	2.275e+00	-0.3	12190
235	1.2008906e+02	3.9465250e+01	1.00e+00	2.170e+00	0.0	12097
236	1.2004980e+02	1.9572464e+01	1.00e+00	1.600e+00	0.0	12055
237	1.2001261e+02	1.1953736e+01	1.00e+00	1.383e+00	0.0	12005
238	1.1992035e+02	3.4543390e+01	1.00e+00	2.026e+00	0.0	11899
239	1.1999921e+02	1.6037241e+02	1.00e+00	5.625e+00	-0.3	11752
240	1.1995424e+02	1.1448516e+02	1.00e+00	4.309e+00	-0.3	11775
241	1.1975848e+02	1.8330689e+01	1.00e+00	1.565e+00	0.0	11756
242	1.1974094e+02	9.5523601e+00	1.00e+00	1.315e+00	0.0	11735
243	1.1967581e+02	1.9039551e+01	1.00e+00	1.585e+00	0.0	11667
244	1.1971770e+02	2.1450612e+02	1.00e+00	7.140e+00	0.0	11427
245	1.1953861e+02	9.0935304e+01	1.00e+00	3.623e+00	-0.3	11487
246	1.1939737e+02	3.4888660e+01	1.00e+00	2.033e+00	0.0	11462
247	1.1937517e+02	2.0456262e+01	1.00e+00	1.625e+00	0.0	11446
248	1.1930066e+02	1.2685724e+01	1.00e+00	1.405e+00	0.0	11384
249	1.1930753e+02	1.0689403e+02	1.00e+00	4.062e+00	0.0	11290
250	1.1919448e+02	1.0550571e+01	1.00e+00	1.345e+00	-0.3	11323
251	1.1914687e+02	2.6050321e+01	1.00e+00	1.781e+00	0.0	11308
252	1.1911826e+02	4.9908842e+00	1.00e+00	1.188e+00	0.0	11290
253	1.1907736e+02	1.1253832e+01	1.00e+00	1.365e+00	0.0	11259
254	1.1913953e+02	2.4059590e+02	1.00e+00	7.813e+00	0.0	11028
255	1.1885933e+02	9.3497100e+01	1.00e+00	3.668e+00	-0.3	11123
256	1.1869399e+02	3.6869660e+01	1.00e+00	2.079e+00	0.0	11096
257	1.1867444e+02	1.8962638e+01	1.00e+00	1.579e+00	0.0	11083
258	1.1863352e+02	7.1576503e+00	1.00e+00	1.251e+00	0.0	11050
259	1.1856694e+02	4.0540411e+01	1.00e+00	2.178e+00	0.0	11003
260	1.1854101e+02	2.8932783e+01	1.00e+00	1.857e+00	-0.3	11013
261	1.1852096e+02	2.5215332e+01	1.00e+00	1.752e+00	0.0	11003
262	1.1850134e+02	1.5324490e+01	1.00e+00	1.477e+00	0.0	10994
263	1.1847560e+02	2.2878785e+01	1.00e+00	1.686e+00	0.0	10980
264	1.1846261e+02	7.3040432e+01	1.00e+00	3.083e+00	0.0	10958
265	1.1844113e+02	5.7787479e+01	1.00e+00	2.656e+00	-0.3	10966
266	1.1839982e+02	1.9220818e+01	1.00e+00	1.584e+00	0.0	10954
267	1.1838933e+02	5.1462804e+00	1.00e+00	1.193e+00	0.0	10945
268	1.1836667e+02	4.6062132e+00	1.00e+00	1.178e+00	0.0	10935
269	1.1794392e+02	8.5471073e+01	1.00e+00	3.410e+00	0.0	10695
270	1.1797342e+02	1.2806193e+02	1.00e+00	4.582e+00	-0.3	10781
271	1.1783494e+02	4.1619003e+01	1.00e+00	2.196e+00	0.0	10787
272	1.1781470e+02	6.8511856e+00	1.00e+00	1.239e+00	0.0	10775
273	1.1780290e+02	7.7608098e+00	1.00e+00	1.264e+00	0.0	10762
274	1.1775099e+02	4.1156583e+01	1.00e+00	2.181e+00	0.0	10707
275	1.1772416e+02	9.8656641e+00	1.00e+00	1.321e+00	-0.3	10744
276	1.1770965e+02	1.4541374e+01	1.00e+00	1.449e+00	0.0	10724
277	1.1769541e+02	5.0487920e+00	1.00e+00	1.188e+00	0.0	10712
278	1.1765534e+02	2.8755325e+01	1.00e+00	1.839e+00	0.0	10690
279	1.1764058e+02	1.5122400e+01	1.00e+00	1.464e+00	-0.3	10695
280	1.1762385e+02	2.3696985e+01	1.00e+00	1.700e+00	0.0	10684
281	1.1760942e+02	8.0680597e+00	1.00e+00	1.270e+00	0.0	10682
282	1.1759196e+02	1.9387025e+01	1.00e+00	1.581e+00	0.0	10676
283	1.1757747e+02	2.7534963e+01	1.00e+00	1.802e+00	0.0	10665
284	1.1759831e+02	9.3717259e+01	1.00e+00	3.621e+00	0.0	10674
285	1.1755865e+02	2.6898292e+01	1.00e+00	1.785e+00	0.0	10686
286	1.1752279e+02	1.7410935e+01	1.00e+00	1.526e+00	0.0	10669

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287	1.1751534e+02	7.3457565e+00	1.00e+00	1.250e+00	0.0	10657
288	1.1748037e+02	5.2758845e+00	1.00e+00	1.193e+00	0.0	10639
289	1.1744485e+02	7.2602264e+01	1.00e+00	3.036e+00	-0.3	10644
290	1.1741758e+02	1.0351578e+01	1.00e+00	1.332e+00	-0.3	10662
291	1.1740543e+02	1.6284528e+01	1.00e+00	1.494e+00	0.0	10648
292	1.1739469e+02	4.1618895e+00	1.00e+00	1.162e+00	0.0	10640
293	1.1735196e+02	1.3650608e+01	1.00e+00	1.421e+00	0.0	10620
294	1.1735179e+02	5.1519605e+01	1.00e+00	2.452e+00	-0.3	10622
295	7.8060734e+01	1.2693556e+03	1.00e+00	1.543e+01	0.0	16498
296	7.9603114e+01	1.9460203e+03	1.00e+00	2.445e+01	0.0	21823
297	7.1678473e+01	7.2505351e+02	1.00e+00	7.762e+00	0.0	20987
298	7.0618587e+01	2.5387697e+01	1.00e+00	7.860e-01	0.0	19724
299	7.0409985e+01	2.3697649e+01	1.00e+00	7.709e-01	0.0	18850
300	6.9573245e+01	3.3435095e+01	1.00e+00	8.985e-01	0.0	15620
301	6.9958830e+01	2.8359235e+02	1.00e+00	3.239e+00	0.0	14460
302	6.9272658e+01	2.0060396e+02	1.00e+00	2.423e+00	-0.3	15272
303	6.9060472e+01	1.6525357e+02	1.00e+00	2.090e+00	0.0	14770
304	6.8960355e+01	3.0787739e+01	1.00e+00	8.476e-01	0.0	14572
305	6.8917686e+01	3.6707072e+01	1.00e+00	9.033e-01	0.0	14397
306	6.8824746e+01	4.5224226e+01	1.00e+00	9.844e-01	0.0	14039
307	6.8751027e+01	2.7936732e+02	1.00e+00	3.134e+00	0.0	13541
308	6.8649756e+01	3.3166779e+01	1.00e+00	8.757e-01	-0.3	13593
309	6.8612826e+01	5.0533177e+01	1.00e+00	1.034e+00	0.0	13538
310	6.8580679e+01	9.2801635e+00	1.00e+00	6.570e-01	0.0	13456
311	6.8453512e+01	2.6984098e+01	1.00e+00	8.186e-01	0.0	13177
312	6.8379156e+01	9.3212174e+01	1.00e+00	1.420e+00	-0.3	13184
313	6.8326026e+01	6.2144674e+01	1.00e+00	1.138e+00	-0.3	13250
314	6.8297221e+01	4.3919896e+01	1.00e+00	9.726e-01	0.0	13141
315	6.8277528e+01	8.5130904e+00	1.00e+00	6.521e-01	0.0	13073
316	6.8251067e+01	9.4051409e+00	1.00e+00	6.601e-01	0.0	12972
317	6.8037084e+01	1.9668747e+02	1.00e+00	2.342e+00	0.0	12348
318	6.8019060e+01	1.1011017e+02	1.00e+00	1.565e+00	-0.3	12418
319	6.7961763e+01	6.7962281e+01	1.00e+00	1.186e+00	0.0	12408
320	6.7951496e+01	3.3555248e+01	1.00e+00	8.774e-01	0.0	12401
321	6.7929352e+01	7.6128932e+00	1.00e+00	6.451e-01	0.0	12366
322	6.7831185e+01	3.9225785e+01	1.00e+00	9.277e-01	0.0	12218
323	6.7896918e+01	2.7162027e+02	1.00e+00	3.003e+00	-0.3	12249
324	6.7795170e+01	6.8625242e+01	1.00e+00	1.189e+00	-0.3	12286
325	6.7768143e+01	2.7105794e+01	1.00e+00	8.186e-01	0.0	12232
326	6.7758325e+01	1.1728360e+01	1.00e+00	6.819e-01	0.0	12202
327	6.7739727e+01	1.0037060e+01	1.00e+00	6.667e-01	0.0	12147
328	6.7628629e+01	1.5772579e+02	1.00e+00	1.978e+00	0.0	11905
329	6.7754643e+01	3.0379805e+02	1.00e+00	3.281e+00	-0.3	11965
330	6.7559549e+01	8.2642422e+01	1.00e+00	1.309e+00	0.0	11961
331	6.7544607e+01	3.1108376e+01	1.00e+00	8.533e-01	0.0	11943
332	6.7537244e+01	1.4451403e+01	1.00e+00	7.060e-01	0.0	11936
333	6.7506666e+01	3.3803457e+01	1.00e+00	8.766e-01	0.0	11881
334	6.7492013e+01	6.4371064e+01	1.00e+00	1.147e+00	-0.3	11883
335	6.7517010e+01	1.8840004e+02	1.00e+00	2.243e+00	0.0	11862
336	6.7495941e+01	1.1129504e+02	1.00e+00	1.561e+00	0.0	11861
337	6.7458184e+01	3.2972275e+01	1.00e+00	8.691e-01	0.0	11857
338	6.7451960e+01	1.3072461e+01	1.00e+00	6.935e-01	0.0	11848
339	6.7439419e+01	1.0533072e+01	1.00e+00	6.708e-01	0.0	11831
340	6.7313717e+01	1.5595281e+02	1.00e+00	1.950e+00	0.0	11647

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341	6.7312684e+01	1.5051874e+02	1.00e+00	1.901e+00	-0.3	11719
342	5.0560588e+01	7.5216905e+01	1.00e+00	7.424e-01	0.0	42584
343	4.8690420e+01	6.2805965e+01	1.00e+00	6.657e-01	0.0	28190
344	4.7907778e+01	1.2596717e+02	1.00e+00	9.366e-01	0.0	20323
345	4.8096213e+01	7.7889870e+02	1.00e+00	3.846e+00	0.0	16647
346	4.7577000e+01	3.5169612e+02	1.00e+00	1.914e+00	-0.3	16806
347	4.7431100e+01	4.6403858e+01	1.00e+00	5.850e-01	0.0	16445
348	4.7399683e+01	1.7938482e+01	1.00e+00	4.618e-01	0.0	16160
349	4.7288044e+01	3.7398882e+01	1.00e+00	5.456e-01	0.0	15165
350	4.7350933e+01	2.4575275e+02	1.00e+00	1.448e+00	0.0	13819
351	4.7129720e+01	5.3828606e+01	1.00e+00	6.198e-01	-0.3	14406
352	4.7079818e+01	6.0675979e+01	1.00e+00	6.478e-01	0.0	14124
353	4.7056274e+01	1.4832613e+01	1.00e+00	4.523e-01	0.0	13921
354	4.7031351e+01	4.7281045e+01	1.00e+00	5.899e-01	0.0	13674
355	4.7044692e+01	1.7135298e+02	1.00e+00	1.118e+00	0.0	13365
356	4.7023283e+01	2.1640150e+02	1.00e+00	1.309e+00	-0.3	13359
357	4.6962143e+01	4.4968296e+01	1.00e+00	5.796e-01	0.0	13329
358	4.6954700e+01	1.6740084e+01	1.00e+00	4.600e-01	0.0	13307
359	4.6942685e+01	1.1896148e+01	1.00e+00	4.396e-01	0.0	13244
360	4.6784648e+01	5.6648560e+01	1.00e+00	6.314e-01	0.0	12654
361	4.6775473e+01	2.2268630e+02	1.00e+00	1.329e+00	-0.3	12750
362	4.6747677e+01	1.0414336e+02	1.00e+00	8.293e-01	0.0	12720
363	4.6718271e+01	4.7443741e+01	1.00e+00	5.911e-01	0.0	12717
364	4.6711605e+01	1.3828404e+01	1.00e+00	4.500e-01	0.0	12683
365	4.6704928e+01	1.2678489e+01	1.00e+00	4.452e-01	0.0	12659
366	4.6659476e+01	4.7456991e+01	1.00e+00	5.902e-01	0.0	12537
367	4.6656170e+01	1.5430878e+02	1.00e+00	1.037e+00	-0.3	12564
368	4.6646969e+01	9.0046853e+01	1.00e+00	7.681e-01	0.0	12544
369	4.6633402e+01	3.5697747e+01	1.00e+00	5.409e-01	0.0	12540
370	4.6629155e+01	1.3978021e+01	1.00e+00	4.501e-01	0.0	12518
371	4.6620890e+01	2.6323915e+01	1.00e+00	5.016e-01	0.0	12498
372	4.6606556e+01	2.7100040e+02	1.00e+00	1.523e+00	0.0	12382
373	4.6578335e+01	1.6071404e+02	1.00e+00	1.062e+00	-0.3	12420
374	4.6546181e+01	2.7911887e+01	1.00e+00	5.080e-01	0.0	12403
375	4.6541739e+01	1.0823716e+01	1.00e+00	4.369e-01	0.0	12397
376	4.6530411e+01	2.8606651e+01	1.00e+00	5.108e-01	0.0	12372
377	4.6520582e+01	1.9582141e+02	1.00e+00	1.206e+00	0.0	12301
378	4.6489239e+01	3.0118261e+01	1.00e+00	5.171e-01	-0.3	12339
379	4.6474474e+01	1.2630139e+01	1.00e+00	4.443e-01	0.0	12314
380	4.6469563e+01	1.0644346e+01	1.00e+00	4.360e-01	0.0	12302
381	4.6460603e+01	1.1211506e+01	1.00e+00	4.384e-01	0.0	12288
382	4.6367449e+01	3.3658290e+02	1.00e+00	1.782e+00	0.0	12144
383	4.6437862e+01	3.9227302e+02	1.00e+00	2.018e+00	-0.3	12190
384	4.6303680e+01	8.8769057e+01	1.00e+00	7.580e-01	0.0	12223
385	4.6294614e+01	1.0996723e+01	1.00e+00	4.374e-01	0.0	12194
386	4.6290879e+01	1.0696512e+01	1.00e+00	4.362e-01	0.0	12183
387	4.6271027e+01	6.2890821e+01	1.00e+00	6.507e-01	0.0	12147
388	4.6265555e+01	3.4570955e+01	1.00e+00	5.342e-01	-0.3	12159
389	4.6260196e+01	1.1587372e+02	1.00e+00	8.683e-01	0.0	12150
390	4.6255330e+01	7.4687285e+01	1.00e+00	6.989e-01	0.0	12149
391	4.6250115e+01	3.7999848e+01	1.00e+00	5.481e-01	0.0	12144
392	4.6247122e+01	1.5127343e+01	1.00e+00	4.541e-01	0.0	12142
393	4.6240228e+01	2.4538784e+01	1.00e+00	4.927e-01	0.0	12132
394	4.6229037e+01	2.0153970e+02	1.00e+00	1.219e+00	-0.3	12109

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395	4.6213503e+01	2.7700398e+01	1.00e+00	5.055e-01	-0.3	12118
396	4.6207561e+01	1.0516787e+01	1.00e+00	4.349e-01	0.0	12117
397	4.6202673e+01	2.4754064e+01	1.00e+00	4.933e-01	0.0	12107
398	4.6191075e+01	9.4658600e+01	1.00e+00	7.798e-01	0.0	12096
399	4.6184822e+01	2.2864816e+01	1.00e+00	4.854e-01	-0.3	12096
400	4.6180220e+01	3.9576399e+01	1.00e+00	5.539e-01	0.0	12095
401	4.6176221e+01	2.9863049e+01	1.00e+00	5.140e-01	0.0	12092
402	4.6170326e+01	5.9404345e+01	1.00e+00	6.350e-01	0.0	12084
403	4.6173263e+01	1.4370557e+02	1.00e+00	9.803e-01	0.0	12080
404	4.6171468e+01	1.8956057e+02	1.00e+00	1.168e+00	0.0	12085
405	3.3918441e+01	9.8707401e+01	1.00e+00	4.593e-01	0.0	47337
406	3.2334826e+01	1.1667018e+02	1.00e+00	4.794e-01	0.0	31011
407	3.1668616e+01	2.1510186e+02	1.00e+00	6.579e-01	0.0	22164
408	3.1766989e+01	1.6268548e+03	1.00e+00	3.383e+00	0.0	17792
409	3.1378347e+01	6.5018906e+02	1.00e+00	1.471e+00	-0.3	17958
410	3.1259006e+01	1.3132541e+02	1.00e+00	4.939e-01	0.0	17543
411	3.1233134e+01	2.7115717e+01	1.00e+00	2.994e-01	0.0	17219
412	3.1163459e+01	9.2578943e+01	1.00e+00	4.204e-01	0.0	16324
413	3.1210637e+01	1.1260719e+03	1.00e+00	2.346e+00	0.0	14639
414	3.1029687e+01	1.5601297e+02	1.00e+00	5.395e-01	-0.3	14890
415	3.0991169e+01	2.7467812e+01	1.00e+00	3.027e-01	0.0	14771
416	3.0977207e+01	2.2189300e+01	1.00e+00	2.927e-01	0.0	14656
417	3.0949756e+01	1.0848296e+02	1.00e+00	4.499e-01	0.0	14355
418	3.0959598e+01	5.4915608e+02	1.00e+00	1.256e+00	-0.3	14134
419	3.0920928e+01	2.2888959e+02	1.00e+00	6.694e-01	-0.3	14111
420	3.0908244e+01	2.4936723e+01	1.00e+00	2.973e-01	0.0	14075
421	3.0903493e+01	2.0880034e+01	1.00e+00	2.899e-01	0.0	14031
422	3.0865117e+01	1.5040428e+02	1.00e+00	5.256e-01	0.0	13787
423	3.0899666e+01	6.0246456e+02	1.00e+00	1.350e+00	-0.3	13795
424	3.0843824e+01	1.8141498e+02	1.00e+00	5.820e-01	-0.3	13787
425	3.0832978e+01	2.3631510e+01	1.00e+00	2.954e-01	0.0	13741
426	3.0828758e+01	1.8272953e+01	1.00e+00	2.857e-01	0.0	13703
427	3.0803351e+01	4.3956810e+01	1.00e+00	3.322e-01	0.0	13504
428	3.0789579e+01	1.7382636e+02	1.00e+00	5.676e-01	-0.3	13509
429	3.0800566e+01	3.7975617e+02	1.00e+00	9.402e-01	-0.3	13430
430	3.0775422e+01	3.0035495e+02	1.00e+00	7.958e-01	0.0	13414
431	3.0762021e+01	6.6073679e+01	1.00e+00	3.723e-01	0.0	13382
432	3.0758977e+01	1.6722681e+01	1.00e+00	2.832e-01	0.0	13371
433	3.0749026e+01	3.6109586e+01	1.00e+00	3.182e-01	0.0	13308
434	3.0737591e+01	6.2505035e+02	1.00e+00	1.381e+00	-0.3	12993
435	3.0700176e+01	2.8044415e+02	1.00e+00	7.588e-01	-0.3	13048
436	3.0657061e+01	3.5929301e+01	1.00e+00	3.185e-01	0.0	13039
437	3.0652660e+01	2.2030781e+01	1.00e+00	2.935e-01	0.0	13018
438	3.0640819e+01	4.9946711e+01	1.00e+00	3.433e-01	0.0	12989
439	3.0636886e+01	2.0761049e+02	1.00e+00	6.258e-01	0.0	12896
440	3.0615026e+01	6.5573898e+01	1.00e+00	3.712e-01	-0.3	12934
441	3.0606192e+01	5.6178003e+01	1.00e+00	3.542e-01	0.0	12907
442	3.0602852e+01	1.6450697e+01	1.00e+00	2.832e-01	0.0	12894
443	3.0595991e+01	2.3759827e+01	1.00e+00	2.963e-01	0.0	12874
444	3.0572177e+01	7.5450619e+02	1.00e+00	1.600e+00	0.0	12716
445	3.0528174e+01	7.2179141e+01	1.00e+00	3.826e-01	-0.3	12755
446	3.0513085e+01	6.9978331e+01	1.00e+00	3.785e-01	0.0	12741
447	3.0509328e+01	1.7037997e+01	1.00e+00	2.844e-01	0.0	12734
448	3.0502256e+01	2.3811130e+01	1.00e+00	2.963e-01	0.0	12725

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449	3.0486974e+01	3.6349616e+01	1.00e+00	3.185e-01	0.0	12703
450	3.0481922e+01	1.6736431e+02	1.00e+00	5.506e-01	-0.3	12716
451	3.0483871e+01	1.8017103e+02	1.00e+00	5.734e-01	0.0	12705
452	3.0475573e+01	1.7916061e+02	1.00e+00	5.714e-01	0.0	12717
453	3.0470484e+01	2.7665825e+01	1.00e+00	3.029e-01	0.0	12704
454	3.0468766e+01	1.6734034e+01	1.00e+00	2.836e-01	0.0	12699
455	3.0453104e+01	1.6765619e+01	1.00e+00	2.836e-01	0.0	12667
456	3.0409801e+01	5.1747785e+02	1.00e+00	1.167e+00	-0.3	12668
457	3.0440499e+01	5.5823422e+02	1.00e+00	1.242e+00	-0.3	12779
458	3.0365851e+01	2.0660774e+02	1.00e+00	6.177e-01	0.0	12751
459	3.0354769e+01	3.8817041e+01	1.00e+00	3.223e-01	0.0	12716
460	3.0352441e+01	1.9182931e+01	1.00e+00	2.878e-01	0.0	12694
461	3.0343608e+01	2.4779312e+01	1.00e+00	2.974e-01	0.0	12634
462	3.0317576e+01	1.6990966e+02	1.00e+00	5.518e-01	0.0	12541
463	3.0306107e+01	1.5663758e+02	1.00e+00	5.282e-01	-0.3	12579
464	3.0297304e+01	1.0899765e+02	1.00e+00	4.445e-01	0.0	12551
465	3.0294137e+01	2.3782278e+01	1.00e+00	2.952e-01	0.0	12552
466	3.0291922e+01	3.0759307e+01	1.00e+00	3.074e-01	0.0	12545
467	3.0281728e+01	6.4239225e+01	1.00e+00	3.660e-01	0.0	12521
468	3.0277059e+01	9.4063923e+01	1.00e+00	4.180e-01	-0.3	12523
469	3.0283661e+01	3.8883693e+02	1.00e+00	9.340e-01	0.0	12517
470	3.0270496e+01	9.4537084e+01	1.00e+00	4.188e-01	0.0	12513
471	3.0266835e+01	1.6777603e+01	1.00e+00	2.828e-01	0.0	12517
472	3.0265138e+01	2.1577648e+01	1.00e+00	2.912e-01	0.0	12512
473	3.0250496e+01	9.0120815e+01	1.00e+00	4.108e-01	0.0	12495
474	3.0253695e+01	1.6838606e+02	1.00e+00	5.475e-01	-0.3	12496
475	3.0243230e+01	1.4611283e+02	1.00e+00	5.084e-01	-0.3	12506
476	3.0238828e+01	3.3185057e+01	1.00e+00	3.113e-01	0.0	12499
477	3.0237327e+01	1.6771303e+01	1.00e+00	2.827e-01	0.0	12500
478	1.6020719e+01	1.3824867e+03	1.00e+00	6.204e-01	0.0	27373
479	1.4602861e+01	2.1351533e+03	1.00e+00	9.718e-01	0.0	52243
480	8.7570596e+00	2.0196643e+03	1.00e+00	3.239e-01	0.0	48762
481	7.7766171e+00	6.5916310e+02	1.00e+00	1.164e-01	0.0	47024
482	7.3912014e+00	6.1351119e+02	1.00e+00	1.038e-01	0.0	42144
483	6.6769462e+00	2.1589620e+03	1.00e+00	2.366e-01	0.0	31058
484	6.9657181e+00	4.4953139e+03	1.00e+00	4.439e-01	-0.3	30858
485	6.2210436e+00	4.0897229e+03	1.00e+00	3.402e-01	0.0	33550
486	5.9181282e+00	4.5852957e+02	1.00e+00	7.001e-02	0.0	30588
487	5.8628926e+00	4.2331347e+02	1.00e+00	6.725e-02	0.0	29361
488	5.7144784e+00	3.6022524e+02	1.00e+00	6.231e-02	0.0	27427
489	5.6078091e+00	7.8249663e+03	1.00e+00	5.012e-01	0.0	23253
490	5.5354182e+00	1.0495319e+04	1.00e+00	6.463e-01	-0.3	24862
491	5.2132187e+00	2.7259789e+03	1.00e+00	1.783e-01	0.0	24366
492	5.1714239e+00	4.6956257e+02	1.00e+00	6.221e-02	0.0	23940
493	5.1463448e+00	4.0566578e+02	1.00e+00	5.851e-02	0.0	23593
494	5.0384868e+00	2.5645918e+03	1.00e+00	1.594e-01	0.0	22191
495	5.0065738e+00	1.5290055e+03	1.00e+00	1.089e-01	-0.3	22384
496	4.9850157e+00	2.3940050e+03	1.00e+00	1.487e-01	0.0	22159
497	4.9684168e+00	9.3023808e+02	1.00e+00	7.982e-02	0.0	22045
498	4.9539241e+00	1.3206906e+03	1.00e+00	9.759e-02	0.0	21919
499	4.9346833e+00	1.3399446e+03	1.00e+00	9.793e-02	0.0	21745
500	4.9289685e+00	5.3616653e+03	1.00e+00	2.819e-01	0.0	21489
501	4.9371402e+00	6.3859410e+03	1.00e+00	3.296e-01	0.0	21383
502	4.8808163e+00	1.1012150e+03	1.00e+00	8.567e-02	0.0	21351

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503	4.8732047e+00	2.7892144e+02	1.00e+00	4.867e-02	0.0	21299
504	4.8559659e+00	3.0303564e+02	1.00e+00	4.957e-02	0.0	21163
505	4.7096331e+00	9.5621517e+03	1.00e+00	4.356e-01	-0.3	19588
506	4.6787453e+00	8.6003060e+03	1.00e+00	3.907e-01	-0.3	19813
507	4.6170419e+00	1.4574713e+03	1.00e+00	9.403e-02	0.0	19728
508	4.6091587e+00	2.5005762e+02	1.00e+00	4.538e-02	0.0	19678
509	4.5951034e+00	3.0589511e+02	1.00e+00	4.729e-02	0.0	19590
510	4.5413022e+00	2.4718459e+03	1.00e+00	1.303e-01	0.0	19191
511	4.5595780e+00	8.7420648e+03	1.00e+00	3.768e-01	-0.3	19272
512	4.5442711e+00	8.2406932e+03	1.00e+00	3.550e-01	0.0	19181
513	4.5104566e+00	6.8884068e+02	1.00e+00	6.066e-02	0.0	19140
514	4.5073083e+00	2.3643872e+02	1.00e+00	4.329e-02	0.0	19111
515	4.4837969e+00	4.1037925e+02	1.00e+00	4.969e-02	0.0	18896
516	4.5042959e+00	1.4840590e+04	1.00e+00	6.012e-01	-0.3	17868
517	4.3671550e+00	4.6130614e+03	1.00e+00	1.999e-01	-0.3	18569
518	4.3294763e+00	1.4875060e+03	1.00e+00	8.627e-02	0.0	18385
519	4.3176789e+00	5.6159750e+02	1.00e+00	5.334e-02	0.0	18250
520	4.3038928e+00	1.0660119e+03	1.00e+00	7.061e-02	0.0	18087
521	4.3051905e+00	8.0438338e+03	1.00e+00	3.141e-01	0.0	17882
522	4.2910321e+00	4.5456496e+03	1.00e+00	1.908e-01	-0.3	17880
523	4.2803717e+00	1.9800432e+02	1.00e+00	3.990e-02	0.0	17852
524	4.2781083e+00	1.9857857e+02	1.00e+00	3.990e-02	0.0	17840
525	4.2613047e+00	8.6759791e+02	1.00e+00	6.260e-02	0.0	17699
526	4.2518595e+00	4.3767463e+03	1.00e+00	1.820e-01	-0.3	17704
527	4.2427936e+00	1.2532565e+03	1.00e+00	7.535e-02	-0.3	17733
528	4.2379317e+00	3.4909036e+02	1.00e+00	4.459e-02	0.0	17670
529	4.2335648e+00	2.0695221e+02	1.00e+00	3.972e-02	0.0	17618
530	4.2090228e+00	3.4535861e+03	1.00e+00	1.478e-01	0.0	17394
531	4.2201878e+00	6.5504808e+03	1.00e+00	2.524e-01	-0.3	17409
532	4.1998164e+00	2.3821224e+03	1.00e+00	1.117e-01	0.0	17404
533	4.1967167e+00	1.8476150e+02	1.00e+00	3.862e-02	0.0	17390
534	4.1947851e+00	1.8511021e+02	1.00e+00	3.861e-02	0.0	17372
535	4.1101885e+00	4.9818660e+03	1.00e+00	1.907e-01	0.0	16831
536	4.1121777e+00	6.7251309e+03	1.00e+00	2.465e-01	-0.3	16901
537	4.0910577e+00	9.2307234e+02	1.00e+00	6.112e-02	0.0	16868
538	4.0880161e+00	2.5450300e+02	1.00e+00	3.999e-02	0.0	16865
539	4.0849947e+00	2.1443025e+02	1.00e+00	3.867e-02	0.0	16853
540	4.0727297e+00	8.6551715e+03	1.00e+00	3.021e-01	0.0	16684
541	4.0866040e+00	1.0315600e+04	1.00e+00	3.563e-01	-0.3	16773
542	4.0529779e+00	1.6131013e+03	1.00e+00	8.147e-02	0.0	16755
543	4.0509506e+00	2.6477876e+02	1.00e+00	3.972e-02	0.0	16738
544	4.0485602e+00	1.9833221e+02	1.00e+00	3.766e-02	0.0	16716
545	4.0237921e+00	7.7696964e+02	1.00e+00	5.526e-02	0.0	16556
546	4.0247403e+00	4.6824886e+03	1.00e+00	1.742e-01	-0.3	16581
547	4.0352039e+00	7.6690729e+03	1.00e+00	2.668e-01	-0.3	16617
548	4.0085746e+00	1.7303647e+03	1.00e+00	8.374e-02	0.0	16596
549	4.0065812e+00	2.5257086e+02	1.00e+00	3.897e-02	0.0	16571
550	4.0048567e+00	2.6831746e+02	1.00e+00	3.942e-02	0.0	16541
551	3.9791257e+00	1.2111296e+03	1.00e+00	6.732e-02	0.0	16338
552	3.9912506e+00	7.0046971e+03	1.00e+00	2.413e-01	-0.3	16383
553	3.9728886e+00	4.2438986e+03	1.00e+00	1.573e-01	-0.3	16436
554	3.9651827e+00	8.2640082e+02	1.00e+00	5.554e-02	0.0	16416
555	3.9637531e+00	4.0962010e+02	1.00e+00	4.318e-02	0.0	16389
556	3.9588973e+00	3.6112977e+02	1.00e+00	4.170e-02	0.0	16319

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557	3.9496873e+00	4.6637790e+03	1.00e+00	1.680e-01	0.0	16193
558	3.9517670e+00	4.9222855e+03	1.00e+00	1.758e-01	-0.3	16216
559	3.9380267e+00	1.3907477e+03	1.00e+00	7.154e-02	0.0	16204
560	3.9365001e+00	1.8256552e+02	1.00e+00	3.621e-02	0.0	16193
561	3.9350018e+00	1.7864555e+02	1.00e+00	3.609e-02	0.0	16181
562	3.9004337e+00	1.0256049e+03	1.00e+00	6.016e-02	0.0	16001
563	3.9352302e+00	7.8567481e+03	1.00e+00	2.598e-01	-0.3	16065
564	3.9006774e+00	5.2455508e+03	1.00e+00	1.810e-01	-0.3	16275
565	3.8893148e+00	1.2000759e+03	1.00e+00	6.480e-02	0.0	16152
566	3.8867748e+00	5.8801003e+02	1.00e+00	4.732e-02	0.0	16117
567	3.8843104e+00	3.8364949e+02	1.00e+00	4.149e-02	0.0	16065
568	3.8789724e+00	2.2129743e+03	1.00e+00	9.330e-02	0.0	15980
569	3.8767966e+00	9.2510518e+02	1.00e+00	5.674e-02	-0.3	15987
570	3.8753139e+00	9.2107149e+02	1.00e+00	5.658e-02	0.0	15975
571	3.8739803e+00	7.1236723e+02	1.00e+00	5.066e-02	0.0	15967
572	3.8721026e+00	1.4102551e+03	1.00e+00	7.034e-02	0.0	15956
573	3.8726360e+00	3.7207943e+03	1.00e+00	1.357e-01	0.0	15942
574	3.8707143e+00	3.8009599e+03	1.00e+00	1.378e-01	0.0	15933
575	3.8665784e+00	5.2045506e+02	1.00e+00	4.512e-02	0.0	15932
576	3.8657436e+00	2.0382321e+02	1.00e+00	3.619e-02	0.0	15922
577	3.8628711e+00	4.1842294e+02	1.00e+00	4.220e-02	0.0	15905
578	3.8539592e+00	5.0655631e+03	1.00e+00	1.722e-01	-0.3	15905
579	3.8485027e+00	2.6199520e+03	1.00e+00	1.035e-01	-0.3	15919
580	3.8440890e+00	4.1285147e+02	1.00e+00	4.183e-02	0.0	15898
581	3.8432593e+00	1.6970279e+02	1.00e+00	3.504e-02	0.0	15884
582	3.8370120e+00	5.3853085e+02	1.00e+00	4.520e-02	0.0	15824
583	3.8319008e+00	2.1526069e+03	1.00e+00	8.980e-02	-0.3	15830
584	3.8273573e+00	9.5319598e+02	1.00e+00	5.654e-02	-0.3	15871
585	3.8244589e+00	4.5212136e+02	1.00e+00	4.265e-02	0.0	15827
586	3.8228253e+00	7.6450662e+02	1.00e+00	5.123e-02	0.0	15809
587	3.8207750e+00	7.3425342e+02	1.00e+00	5.036e-02	0.0	15780
588	3.8240933e+00	5.8803456e+03	1.00e+00	1.922e-01	0.0	15760
589	3.8202491e+00	2.7146943e+03	1.00e+00	1.048e-01	0.0	15754
590	3.8151583e+00	5.0087517e+02	1.00e+00	4.385e-02	0.0	15755
591	3.8144566e+00	1.7013070e+02	1.00e+00	3.478e-02	0.0	15749
592	3.8088463e+00	5.4554916e+02	1.00e+00	4.499e-02	0.0	15710
593	3.8059312e+00	3.2502010e+03	1.00e+00	1.188e-01	-0.3	15709
594	3.8009352e+00	8.0127613e+02	1.00e+00	5.188e-02	-0.3	15729
595	3.7983242e+00	1.6790276e+02	1.00e+00	3.460e-02	0.0	15711
596	3.7964472e+00	4.6194003e+02	1.00e+00	4.256e-02	0.0	15688
597	3.7907243e+00	2.8435946e+03	1.00e+00	1.070e-01	0.0	15630
598	3.7912058e+00	4.1991659e+03	1.00e+00	1.437e-01	-0.3	15642
599	3.7845744e+00	8.7649549e+02	1.00e+00	5.357e-02	0.0	15633
600	3.7835946e+00	1.7301762e+02	1.00e+00	3.457e-02	0.0	15627
601	3.7823592e+00	1.7304534e+02	1.00e+00	3.456e-02	0.0	15617
602	3.7485471e+00	1.2689818e+03	1.00e+00	6.337e-02	0.0	15459
603	3.7678956e+00	9.8330408e+03	1.00e+00	2.927e-01	-0.3	15496
604	3.7761864e+00	1.0571372e+04	1.00e+00	3.138e-01	0.0	15550
605	3.7405477e+00	1.1066476e+03	1.00e+00	5.885e-02	0.0	15520
606	3.7391941e+00	2.3370890e+02	1.00e+00	3.581e-02	0.0	15496
607	3.7381606e+00	1.9884630e+02	1.00e+00	3.488e-02	0.0	15472
608	3.7278014e+00	6.8621585e+02	1.00e+00	4.755e-02	0.0	15408
609	3.7272357e+00	3.4949923e+03	1.00e+00	1.210e-01	-0.3	15425
610	3.7246689e+00	2.6374067e+03	1.00e+00	9.848e-02	-0.3	15438

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611	3.7215009e+00	9.8843109e+02	1.00e+00	5.531e-02	0.0	15422
612	3.7206355e+00	2.0313831e+02	1.00e+00	3.481e-02	0.0	15414
613	3.7195071e+00	2.6050337e+02	1.00e+00	3.629e-02	0.0	15399
614	3.7054974e+00	3.1122902e+03	1.00e+00	1.100e-01	0.0	15308
615	3.7039611e+00	4.1886228e+03	1.00e+00	1.377e-01	-0.3	15320
616	3.6992068e+00	9.3834623e+02	1.00e+00	5.357e-02	0.0	15311
617	3.6984807e+00	1.6723423e+02	1.00e+00	3.368e-02	0.0	15308
618	3.6973474e+00	1.6735021e+02	1.00e+00	3.367e-02	0.0	15303
619	3.6571179e+00	2.6823645e+03	1.00e+00	9.670e-02	0.0	15142
620	3.6978878e+00	1.0635449e+04	1.00e+00	3.033e-01	-0.3	15285
621	3.6739011e+00	8.0187753e+03	1.00e+00	2.331e-01	0.0	15313
622	3.6462836e+00	1.0293826e+03	1.00e+00	5.485e-02	0.0	15261
623	3.6449796e+00	2.0472234e+02	1.00e+00	3.417e-02	0.0	15235
624	3.6434398e+00	2.8949661e+02	1.00e+00	3.627e-02	0.0	15191
625	3.6371383e+00	6.9414611e+02	1.00e+00	4.628e-02	0.0	15124
626	3.6351217e+00	1.5348302e+03	1.00e+00	6.716e-02	-0.3	15139
627	3.6346599e+00	1.3898310e+03	1.00e+00	6.356e-02	0.0	15133
628	3.6327062e+00	1.8340090e+03	1.00e+00	7.455e-02	0.0	15117
629	3.6316944e+00	4.0582075e+02	1.00e+00	3.902e-02	0.0	15115
630	3.6310741e+00	3.7045262e+02	1.00e+00	3.814e-02	0.0	15111
631	3.6288573e+00	4.7101938e+02	1.00e+00	4.061e-02	0.0	15090
632	3.6271557e+00	2.4095397e+03	1.00e+00	8.864e-02	-0.3	15088
633	3.6291345e+00	2.9130550e+03	1.00e+00	1.012e-01	-0.3	15081
634	3.6245831e+00	1.4115589e+03	1.00e+00	6.383e-02	0.0	15078
635	3.6238578e+00	1.6480112e+02	1.00e+00	3.296e-02	0.0	15077
636	3.6231875e+00	2.0997295e+02	1.00e+00	3.407e-02	0.0	15074
637	3.6023437e+00	1.3250068e+04	1.00e+00	3.527e-01	0.0	14845
638	3.5964275e+00	1.2172383e+04	1.00e+00	3.255e-01	-0.3	14980
639	3.5566848e+00	3.9864514e+02	1.00e+00	3.809e-02	0.0	14928
640	3.5546705e+00	3.1076944e+02	1.00e+00	3.595e-02	0.0	14913
641	3.5516268e+00	2.9826844e+02	1.00e+00	3.559e-02	0.0	14897
642	3.5462840e+00	3.8721732e+03	1.00e+00	1.201e-01	0.0	14878
643	3.5437288e+00	5.7239028e+02	1.00e+00	4.192e-02	-0.3	14886
644	3.5427839e+00	4.2673140e+02	1.00e+00	3.846e-02	0.0	14884
645	3.5419354e+00	2.2798659e+02	1.00e+00	3.375e-02	0.0	14876
646	3.5373769e+00	1.2869424e+03	1.00e+00	5.869e-02	0.0	14851
647	3.5394914e+00	3.5853725e+03	1.00e+00	1.130e-01	-0.3	14856
648	3.5376227e+00	4.0361941e+03	1.00e+00	1.235e-01	0.0	14852
649	3.5340605e+00	3.2931733e+02	1.00e+00	3.605e-02	0.0	14854
650	3.5336561e+00	1.6388025e+02	1.00e+00	3.215e-02	0.0	14853
651	3.5317851e+00	4.3797228e+02	1.00e+00	3.858e-02	0.0	14834
652	3.5284472e+00	2.9886890e+03	1.00e+00	9.836e-02	-0.3	14838
653	3.5278579e+00	3.9882594e+03	1.00e+00	1.218e-01	-0.3	14854
654	3.5241314e+00	7.0473147e+02	1.00e+00	4.472e-02	0.0	14837
655	3.5236379e+00	1.6497033e+02	1.00e+00	3.208e-02	0.0	14832
656	3.5227914e+00	1.6477758e+02	1.00e+00	3.207e-02	0.0	14826
657	3.4772805e+00	7.6702168e+03	1.00e+00	2.027e-01	0.0	14614
658	3.4760233e+00	7.4623067e+03	1.00e+00	1.979e-01	-0.3	14692
659	3.4570272e+00	2.2363448e+03	1.00e+00	7.818e-02	0.0	14668
660	3.4549727e+00	4.5752332e+02	1.00e+00	3.809e-02	0.0	14657
661	3.4529757e+00	4.1701992e+02	1.00e+00	3.713e-02	0.0	14646
662	3.4511529e+00	3.7592796e+03	1.00e+00	1.121e-01	0.0	14638
663	3.4476903e+00	1.0712185e+03	1.00e+00	5.168e-02	-0.3	14663
664	3.4469432e+00	5.0953642e+02	1.00e+00	3.909e-02	0.0	14655

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665	3.4461376e+00	3.8394275e+02	1.00e+00	3.627e-02	0.0	14653
666	3.4431658e+00	1.8728892e+03	1.00e+00	6.950e-02	0.0	14633
667	3.4431151e+00	2.9044980e+03	1.00e+00	9.255e-02	-0.3	14639
668	2.5822008e+00	1.8863026e+03	1.00e+00	4.115e-02	0.0	34970
669	2.4938807e+00	3.9470901e+03	1.00e+00	6.459e-02	0.0	26028
670	2.4639614e+00	6.8915778e+03	1.00e+00	9.725e-02	0.0	21094
671	2.4923704e+00	2.9372302e+04	1.00e+00	3.624e-01	0.0	18901
672	2.4492606e+00	9.5148502e+03	1.00e+00	1.262e-01	0.0	18519
673	2.4397868e+00	4.1820426e+02	1.00e+00	2.334e-02	0.0	18260
674	2.4380374e+00	3.8844470e+02	1.00e+00	2.301e-02	0.0	18023
675	2.4239216e+00	3.3700178e+03	1.00e+00	5.643e-02	0.0	16030
676	2.4211477e+00	1.8380832e+03	1.00e+00	3.937e-02	-0.3	16027
677	2.4201504e+00	5.5196150e+03	1.00e+00	7.994e-02	0.0	15871
678	2.4183468e+00	1.7428341e+03	1.00e+00	3.822e-02	0.0	15797
679	2.4175348e+00	5.6827781e+02	1.00e+00	2.527e-02	0.0	15747
680	2.4167498e+00	4.9589342e+02	1.00e+00	2.446e-02	0.0	15669
681	2.4129997e+00	5.2512843e+03	1.00e+00	7.661e-02	0.0	15257
682	2.4125167e+00	3.2927161e+03	1.00e+00	5.512e-02	-0.3	15247
683	2.4105897e+00	1.7994542e+03	1.00e+00	3.871e-02	0.0	15216
684	2.4099956e+00	2.7783830e+02	1.00e+00	2.206e-02	0.0	15184
685	2.4094442e+00	2.5896597e+02	1.00e+00	2.185e-02	0.0	15152
686	2.4027884e+00	2.2915732e+03	1.00e+00	4.404e-02	0.0	14892
687	2.4070148e+00	1.0709385e+04	1.00e+00	1.360e-01	-0.3	14902
688	2.4018060e+00	3.4339514e+03	1.00e+00	5.641e-02	0.0	14886
689	2.4003641e+00	2.5630516e+02	1.00e+00	2.188e-02	0.0	14887
690	2.4000918e+00	2.3546148e+02	1.00e+00	2.165e-02	0.0	14881
691	2.3945249e+00	2.2064281e+03	1.00e+00	4.291e-02	0.0	14765
692	2.3988518e+00	9.0317541e+03	1.00e+00	1.170e-01	-0.3	14771
693	2.3928237e+00	1.6445501e+03	1.00e+00	3.681e-02	-0.3	14783
694	2.3920641e+00	8.7514845e+02	1.00e+00	2.850e-02	0.0	14769
695	2.3915796e+00	6.0531690e+02	1.00e+00	2.559e-02	0.0	14759
696	2.3897948e+00	7.2260628e+02	1.00e+00	2.685e-02	0.0	14734
697	2.3890457e+00	2.3261570e+03	1.00e+00	4.407e-02	-0.3	14739
698	2.3894478e+00	3.1099665e+03	1.00e+00	5.251e-02	0.0	14726
699	2.3881593e+00	3.7695456e+03	1.00e+00	5.956e-02	0.0	14730
700	2.3872460e+00	7.0875361e+02	1.00e+00	2.667e-02	0.0	14727
701	2.3869886e+00	2.2245164e+02	1.00e+00	2.145e-02	0.0	14727
702	2.3856800e+00	2.5998438e+02	1.00e+00	2.184e-02	0.0	14715
703	2.3764436e+00	1.1383662e+04	1.00e+00	1.401e-01	-0.3	14709
704	2.3837471e+00	1.4393685e+04	1.00e+00	1.731e-01	-0.3	14728
705	2.3679329e+00	2.2660392e+03	1.00e+00	4.293e-02	0.0	14719
706	2.3671252e+00	3.6944234e+02	1.00e+00	2.289e-02	0.0	14699
707	2.3665185e+00	2.3120569e+02	1.00e+00	2.142e-02	0.0	14679
708	2.3642077e+00	5.4720146e+03	1.00e+00	7.656e-02	0.0	14627
709	2.3634374e+00	2.5648828e+03	1.00e+00	4.593e-02	-0.3	14643
710	2.3623928e+00	1.4200967e+03	1.00e+00	3.386e-02	0.0	14637
711	2.3620672e+00	3.5525361e+02	1.00e+00	2.267e-02	0.0	14636
712	2.3615989e+00	4.5961373e+02	1.00e+00	2.376e-02	0.0	14632
713	2.3577719e+00	6.9998134e+03	1.00e+00	9.219e-02	0.0	14608
714	2.3582316e+00	6.2061851e+03	1.00e+00	8.391e-02	-0.3	14613
715	2.3541229e+00	1.0508865e+03	1.00e+00	2.985e-02	0.0	14611
716	2.3537468e+00	2.2057824e+02	1.00e+00	2.118e-02	0.0	14603
717	2.3532257e+00	2.1953239e+02	1.00e+00	2.116e-02	0.0	14599
718	2.3489420e+00	1.3819634e+03	1.00e+00	3.321e-02	0.0	14576

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719	2.3515746e+00	7.7116362e+03	1.00e+00	9.916e-02	-0.3	14589
720	2.3472714e+00	2.5795385e+03	1.00e+00	4.559e-02	-0.3	14592
721	2.3465426e+00	5.4194992e+02	1.00e+00	2.444e-02	0.0	14590
722	2.3462385e+00	3.3551069e+02	1.00e+00	2.230e-02	0.0	14585
723	2.3450008e+00	1.3761889e+03	1.00e+00	3.307e-02	0.0	14579
724	2.3444590e+00	1.5891168e+03	1.00e+00	3.526e-02	-0.3	14579
725	2.3447429e+00	5.3041367e+03	1.00e+00	7.374e-02	0.0	14579
726	2.3434852e+00	1.5912241e+03	1.00e+00	3.526e-02	0.0	14574
727	2.3430719e+00	2.4594662e+02	1.00e+00	2.134e-02	0.0	14577
728	2.3427987e+00	3.1206002e+02	1.00e+00	2.202e-02	0.0	14574
729	2.3384570e+00	2.9618467e+03	1.00e+00	4.928e-02	0.0	14552
730	2.3429303e+00	9.6527440e+03	1.00e+00	1.186e-01	-0.3	14555
731	2.3406799e+00	9.0609427e+03	1.00e+00	1.123e-01	0.0	14566
732	2.3363491e+00	6.5491679e+02	1.00e+00	2.548e-02	0.0	14562
733	2.3361272e+00	3.4215410e+02	1.00e+00	2.227e-02	0.0	14560
734	2.3346453e+00	3.9921574e+02	1.00e+00	2.284e-02	0.0	14550
735	2.3329028e+00	4.2142806e+03	1.00e+00	6.190e-02	-0.3	14531
736	2.3328860e+00	5.4561749e+03	1.00e+00	7.466e-02	-0.3	14566
737	1.8250369e+00	5.3447727e+03	9.99e-01	4.628e-02	0.0	28101
738	1.7812341e+00	4.3402653e+03	9.99e-01	3.921e-02	0.0	22180
739	1.7673350e+00	1.0130064e+04	9.99e-01	7.297e-02	0.0	18957
740	1.7755809e+00	2.3519286e+04	9.99e-01	1.531e-01	0.0	17614
741	1.7587695e+00	9.0545904e+03	9.99e-01	6.624e-02	0.0	17305
742	1.7560208e+00	4.9996701e+02	9.99e-01	1.641e-02	0.0	17101
743	1.7549713e+00	5.0388859e+02	9.99e-01	1.644e-02	0.0	16908
744	1.7480255e+00	4.2828602e+03	9.99e-01	3.869e-02	0.0	15255
745	1.7448177e+00	3.6873556e+03	9.99e-01	3.507e-02	-0.3	15253
746	1.7450074e+00	1.0939381e+04	9.99e-01	7.662e-02	0.0	15138
747	1.7427226e+00	2.8312288e+03	9.99e-01	3.006e-02	0.0	15094
748	1.7421788e+00	3.5736424e+02	9.99e-01	1.590e-02	0.0	15070
749	1.7418248e+00	4.3225611e+02	9.99e-01	1.632e-02	0.0	15042
750	1.7378834e+00	4.4079660e+03	9.99e-01	3.880e-02	0.0	14734
751	1.7412220e+00	1.4293372e+04	9.99e-01	9.539e-02	-0.3	14729
752	1.7404548e+00	1.5233635e+04	9.99e-01	1.007e-01	0.0	14734
753	1.7356276e+00	1.0872114e+03	9.99e-01	1.996e-02	0.0	14721
754	1.7354361e+00	4.9396887e+02	9.99e-01	1.659e-02	0.0	14717
755	1.7344684e+00	4.7851027e+02	9.99e-01	1.652e-02	0.0	14695
756	1.7314318e+00	9.4187053e+03	9.99e-01	6.700e-02	0.0	14598
757	1.7316300e+00	8.6609987e+03	9.99e-01	6.278e-02	-0.3	14636
758	1.7266099e+00	4.3720275e+03	9.99e-01	3.838e-02	0.0	14624
759	1.7259503e+00	5.6024207e+02	9.99e-01	1.697e-02	0.0	14610
760	1.7256843e+00	5.8683767e+02	9.99e-01	1.712e-02	0.0	14601
761	1.7239656e+00	1.8065292e+03	9.99e-01	2.391e-02	0.0	14579
762	1.7233434e+00	1.6438688e+03	9.99e-01	2.298e-02	-0.3	14583
763	1.7229555e+00	2.7668646e+03	9.99e-01	2.926e-02	0.0	14576
764	1.7226056e+00	3.1368527e+03	9.99e-01	3.132e-02	0.0	14572
765	1.7222764e+00	1.6126411e+03	9.99e-01	2.280e-02	0.0	14573
766	1.7220323e+00	1.0593056e+03	9.99e-01	1.970e-02	0.0	14570
767	1.7217524e+00	6.8146542e+02	9.99e-01	1.759e-02	0.0	14567
768	1.7208810e+00	3.1514114e+03	9.99e-01	3.135e-02	0.0	14563
769	1.7205126e+00	1.3595717e+03	9.99e-01	2.136e-02	-0.3	14568
770	1.7202292e+00	1.4188484e+03	9.99e-01	2.168e-02	0.0	14564
771	1.7199631e+00	9.3063033e+02	9.99e-01	1.896e-02	0.0	14562
772	1.7195168e+00	2.0147878e+03	9.99e-01	2.499e-02	0.0	14561

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773	1.7193321e+00	4.0964418e+03	9.99e-01	3.658e-02	-0.3	14563
774	1.7190184e+00	3.6282730e+03	9.99e-01	3.396e-02	0.0	14560
775	1.7185542e+00	1.2229036e+03	9.99e-01	2.057e-02	0.0	14566
776	1.7183602e+00	5.6824692e+02	9.99e-01	1.692e-02	0.0	14562
777	1.7179650e+00	6.4730105e+02	9.99e-01	1.736e-02	0.0	14561
778	1.7161812e+00	1.0872143e+04	9.99e-01	7.404e-02	0.0	14541
779	1.7149664e+00	8.4654087e+03	9.99e-01	6.063e-02	-0.3	14554
780	1.7126674e+00	9.4262628e+02	9.99e-01	1.894e-02	0.0	14550
781	1.7124563e+00	3.4231377e+02	9.99e-01	1.562e-02	0.0	14549
782	1.7114004e+00	2.5261322e+03	9.99e-01	2.766e-02	0.0	14538
783	1.7110794e+00	1.4062196e+03	9.99e-01	2.147e-02	-0.3	14540
784	1.7108068e+00	3.7423944e+03	9.99e-01	3.435e-02	0.0	14540
785	1.7104514e+00	1.5896339e+03	9.99e-01	2.247e-02	0.0	14537
786	1.7102078e+00	8.1860088e+02	9.99e-01	1.822e-02	0.0	14540
787	1.7099651e+00	6.5493340e+02	9.99e-01	1.732e-02	0.0	14535
788	1.7090572e+00	2.9150878e+03	9.99e-01	2.974e-02	0.0	14534
789	1.7087084e+00	1.2321596e+03	9.99e-01	2.048e-02	-0.3	14535
790	1.7083943e+00	2.3928360e+03	9.99e-01	2.685e-02	0.0	14533
791	1.7081099e+00	1.2047327e+03	9.99e-01	2.032e-02	0.0	14531
792	1.7078466e+00	1.3276042e+03	9.99e-01	2.099e-02	0.0	14530
793	1.7075182e+00	1.2511101e+03	9.99e-01	2.057e-02	0.0	14530
794	1.7072072e+00	3.9424727e+03	9.99e-01	3.533e-02	0.0	14530
795	1.7073377e+00	4.3884369e+03	9.99e-01	3.778e-02	0.0	14525
796	1.7065142e+00	2.7392507e+03	9.99e-01	2.871e-02	0.0	14531
797	1.7062180e+00	5.1440154e+02	9.99e-01	1.651e-02	0.0	14531
798	1.7060324e+00	3.0817158e+02	9.99e-01	1.538e-02	0.0	14527
799	1.7020424e+00	5.9550079e+02	9.99e-01	1.691e-02	0.0	14512
800	1.7035188e+00	1.3361103e+04	9.99e-01	8.667e-02	-0.3	14515
801	1.7013639e+00	3.8940984e+03	9.99e-01	3.488e-02	-0.3	14526
802	1.7002307e+00	1.8999279e+03	9.99e-01	2.399e-02	0.0	14525
803	1.6999878e+00	6.2821927e+02	9.99e-01	1.706e-02	0.0	14519
804	1.6997194e+00	5.6017967e+02	9.99e-01	1.669e-02	0.0	14515
805	1.6978055e+00	1.5670822e+03	9.99e-01	2.214e-02	0.0	14503
806	1.6977804e+00	7.0492400e+03	9.99e-01	5.189e-02	-0.3	14511
807	1.3046795e+00	6.6241853e+03	9.99e-01	3.387e-02	0.0	23553
808	1.2782744e+00	1.3470001e+04	9.99e-01	6.023e-02	0.0	20221
809	1.2718088e+00	1.5608966e+04	9.99e-01	6.834e-02	0.0	18477
810	1.2686271e+00	1.7782607e+04	9.99e-01	7.658e-02	0.0	17770
811	1.2640803e+00	3.2735182e+03	9.99e-01	2.195e-02	0.0	17459
812	1.2628470e+00	6.7479346e+02	9.99e-01	1.218e-02	0.0	17197
813	1.2606927e+00	1.0988411e+03	9.99e-01	1.382e-02	0.0	16704
814	1.2616858e+00	2.4801690e+04	9.99e-01	1.034e-01	0.0	15328
815	1.2550687e+00	2.1211166e+03	9.99e-01	1.800e-02	-0.3	15310
816	1.2533908e+00	5.8912887e+02	9.99e-01	1.220e-02	0.0	15277
817	1.2525395e+00	3.8014114e+02	9.99e-01	1.138e-02	0.0	15204
818	1.2508550e+00	2.4842023e+03	9.99e-01	1.922e-02	0.0	14996
819	1.2511617e+00	8.2029912e+03	9.99e-01	4.079e-02	-0.3	14889
820	1.2500965e+00	8.0413196e+03	9.99e-01	4.017e-02	-0.3	14877
821	1.2492034e+00	1.0090152e+03	9.99e-01	1.369e-02	0.0	14857
822	1.2490427e+00	3.9760342e+02	9.99e-01	1.139e-02	0.0	14845
823	1.2481104e+00	3.8310271e+02	9.99e-01	1.133e-02	0.0	14765
824	1.2466130e+00	1.6920154e+04	9.99e-01	7.376e-02	0.0	14557
825	1.2393608e+00	3.2866103e+03	9.99e-01	2.242e-02	-0.3	14625
826	1.2374432e+00	3.1780520e+03	9.99e-01	2.197e-02	0.0	14588

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827	1.2367079e+00	4.6178326e+02	9.99e-01	1.173e-02	0.0	14583
828	1.2360765e+00	1.1663869e+03	9.99e-01	1.437e-02	0.0	14574
829	1.2350340e+00	2.6970597e+03	9.99e-01	2.009e-02	0.0	14563
830	1.2344733e+00	1.7301396e+03	9.99e-01	1.644e-02	-0.3	14571
831	1.2342131e+00	1.6601773e+03	9.99e-01	1.617e-02	0.0	14561
832	1.2339800e+00	1.4874141e+03	9.99e-01	1.552e-02	0.0	14559
833	1.2337091e+00	2.1478123e+03	9.99e-01	1.800e-02	0.0	14552
834	1.2335424e+00	4.1389874e+03	9.99e-01	2.550e-02	0.0	14554
835	1.2332903e+00	3.4894610e+03	9.99e-01	2.305e-02	0.0	14549
836	1.2329682e+00	1.3881542e+03	9.99e-01	1.513e-02	0.0	14552
837	1.2328197e+00	5.3502782e+02	9.99e-01	1.192e-02	0.0	14551
838	1.2325251e+00	6.7764212e+02	9.99e-01	1.245e-02	0.0	14550
839	1.2310230e+00	1.0904202e+04	9.99e-01	5.092e-02	0.0	14527
840	1.2307253e+00	1.1189088e+04	9.99e-01	5.200e-02	-0.3	14536
841	1.2285977e+00	1.3468139e+03	9.99e-01	1.492e-02	0.0	14532
842	1.2284397e+00	4.3572931e+02	9.99e-01	1.149e-02	0.0	14532
843	1.2279726e+00	9.0055870e+02	9.99e-01	1.324e-02	0.0	14526
844	1.2278234e+00	1.2310296e+04	9.99e-01	5.619e-02	0.0	14519
845	1.2270977e+00	1.0752756e+04	9.99e-01	5.033e-02	-0.3	14531
846	1.2250272e+00	1.5584212e+03	9.99e-01	1.570e-02	0.0	14523
847	1.2248545e+00	3.8872979e+02	9.99e-01	1.129e-02	0.0	14522
848	1.2245571e+00	7.9487191e+02	9.99e-01	1.282e-02	0.0	14521
849	1.2235988e+00	3.9231715e+03	9.99e-01	2.459e-02	0.0	14507
850	1.2236551e+00	7.5610359e+03	9.99e-01	3.829e-02	-0.3	14514
851	9.5859111e-01	1.2627355e+03	9.58e-01	1.148e-02	0.0	20428
852	9.3064118e-01	1.9974528e+03	9.30e-01	1.444e-02	0.0	19225
853	9.2075465e-01	3.4840865e+03	9.20e-01	2.012e-02	0.0	17217
854	9.2867121e-01	2.7816753e+04	9.28e-01	1.118e-01	0.0	16223
855	9.2689310e-01	2.4843970e+04	9.26e-01	1.006e-01	0.0	16019
856	9.1441283e-01	1.2519531e+03	9.13e-01	1.180e-02	0.0	15920
857	9.1398357e-01	3.3965998e+02	9.13e-01	8.361e-03	0.0	15836
858	9.1313054e-01	4.3667546e+02	9.12e-01	8.736e-03	0.0	15638
859	9.1028555e-01	3.5522051e+03	9.09e-01	2.065e-02	0.0	14945
860	9.1047738e-01	1.1268884e+04	9.09e-01	4.968e-02	-0.3	14931
861	9.0850463e-01	3.0066511e+03	9.08e-01	1.855e-02	0.0	14881
862	9.0796079e-01	6.2599569e+02	9.07e-01	9.586e-03	0.0	14863
863	9.0780552e-01	2.7851250e+02	9.07e-01	8.273e-03	0.0	14850
864	9.0720064e-01	1.2929218e+03	9.06e-01	1.208e-02	0.0	14766
865	9.0790629e-01	9.3583233e+03	9.07e-01	4.243e-02	-0.3	14683
866	9.0606325e-01	6.0759940e+02	9.05e-01	9.482e-03	-0.3	14690
867	9.0574384e-01	3.7734059e+02	9.05e-01	8.614e-03	0.0	14684
868	9.0549467e-01	4.1270043e+02	9.04e-01	8.748e-03	0.0	14675
869	9.0478667e-01	3.8026309e+02	9.04e-01	8.629e-03	0.0	14647
870	9.0452062e-01	3.2696302e+03	9.04e-01	1.951e-02	-0.3	14641
871	9.0463935e-01	3.0739977e+03	9.04e-01	1.877e-02	0.0	14628
872	9.0415799e-01	3.2256784e+03	9.03e-01	1.934e-02	0.0	14630
873	9.0390369e-01	5.5386887e+02	9.03e-01	9.282e-03	0.0	14621
874	9.0380880e-01	2.4821385e+02	9.03e-01	8.131e-03	0.0	14622
875	9.0318293e-01	3.2223104e+02	9.02e-01	8.410e-03	0.0	14605
876	9.0151482e-01	1.2264301e+04	9.01e-01	5.338e-02	-0.3	14593
877	8.9979179e-01	1.2248120e+03	8.99e-01	1.182e-02	-0.3	14598
878	8.9934771e-01	8.2414637e+02	8.98e-01	1.030e-02	0.0	14587
879	8.9920879e-01	2.4164199e+02	8.98e-01	8.106e-03	0.0	14583
880	8.9876162e-01	8.1389838e+02	8.98e-01	1.025e-02	0.0	14570

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881	8.9858089e-01	5.6728598e+03	8.98e-01	2.854e-02	-0.3	14553
882	8.9768388e-01	1.1772689e+03	8.97e-01	1.162e-02	-0.3	14563
883	8.9737826e-01	2.5196154e+02	8.96e-01	8.129e-03	0.0	14553
884	8.9724645e-01	4.2068747e+02	8.96e-01	8.764e-03	0.0	14552
885	8.9671804e-01	7.3225118e+02	8.96e-01	9.934e-03	0.0	14545
886	8.9652067e-01	3.5195584e+03	8.96e-01	2.043e-02	-0.3	14550
887	8.9692253e-01	4.8307502e+03	8.96e-01	2.536e-02	0.0	14543
888	8.9619895e-01	3.2705341e+03	8.95e-01	1.949e-02	0.0	14549
889	8.9592308e-01	4.2823173e+02	8.95e-01	8.784e-03	0.0	14546
890	8.9584113e-01	2.3590951e+02	8.95e-01	8.060e-03	0.0	14545
891	8.9486119e-01	2.6044369e+02	8.94e-01	8.147e-03	0.0	14536
892	8.9453024e-01	1.0978908e+04	8.94e-01	4.847e-02	-0.3	14538
893	8.9375134e-01	6.8730761e+03	8.93e-01	3.303e-02	-0.3	14581
894	8.9013184e-01	2.7054050e+03	8.89e-01	1.732e-02	0.0	14559
895	8.8979897e-01	5.0732637e+02	8.89e-01	9.047e-03	0.0	14554
896	8.8964278e-01	5.4159221e+02	8.89e-01	9.175e-03	0.0	14548
897	8.8874815e-01	6.9530319e+02	8.88e-01	9.750e-03	0.0	14531
898	8.8841059e-01	2.0635444e+03	8.87e-01	1.489e-02	-0.3	14532
899	8.8863487e-01	2.3583045e+03	8.88e-01	1.601e-02	0.0	14531
900	8.8805694e-01	3.5849328e+03	8.87e-01	2.062e-02	0.0	14530
901	8.8776154e-01	7.2337575e+02	8.87e-01	9.846e-03	0.0	14533
902	8.8766451e-01	5.3201266e+02	8.87e-01	9.124e-03	0.0	14530
903	8.8747573e-01	2.2993555e+02	8.86e-01	7.986e-03	0.0	14529
904	8.8561082e-01	3.6753078e+03	8.85e-01	2.094e-02	0.0	14513
905	8.8579652e-01	4.1707366e+03	8.85e-01	2.281e-02	-0.3	14524
906	8.8502665e-01	1.8512965e+03	8.84e-01	1.407e-02	0.0	14514
907	8.8490576e-01	2.9357583e+02	8.84e-01	8.208e-03	0.0	14517
908	8.8479686e-01	3.5759801e+02	8.84e-01	8.448e-03	0.0	14516
909	8.8176358e-01	8.8672416e+03	8.81e-01	4.045e-02	0.0	14494
910	8.8398729e-01	1.4329650e+04	8.83e-01	6.103e-02	-0.3	14510
911	8.7889031e-01	1.2423550e+03	8.78e-01	1.174e-02	0.0	14505
912	8.7871322e-01	3.1655710e+02	8.78e-01	8.250e-03	0.0	14503
913	8.7827908e-01	3.1708876e+02	8.77e-01	8.249e-03	0.0	14499
914	8.7807236e-01	1.1034166e+04	8.77e-01	4.859e-02	0.0	14487
915	8.7622622e-01	1.2304583e+03	8.75e-01	1.168e-02	-0.3	14500
916	8.7580433e-01	1.0665062e+03	8.75e-01	1.106e-02	0.0	14496
917	8.7568960e-01	5.4766520e+02	8.75e-01	9.101e-03	0.0	14496
918	8.7522245e-01	1.0912918e+03	8.74e-01	1.114e-02	0.0	14493
919	8.7504254e-01	3.0129356e+03	8.74e-01	1.838e-02	-0.3	14491
920	8.7441437e-01	9.3876190e+02	8.73e-01	1.056e-02	-0.3	14492
921	8.7413789e-01	3.2753718e+02	8.73e-01	8.259e-03	0.0	14491
922	8.7389487e-01	1.9962486e+03	8.73e-01	1.454e-02	0.0	14489
923	8.7384079e-01	2.2125619e+03	8.73e-01	1.535e-02	-0.3	14489
924	8.7364183e-01	2.9393504e+03	8.73e-01	1.809e-02	0.0	14489
925	8.7344513e-01	6.1426655e+02	8.72e-01	9.333e-03	0.0	14491
926	8.7335714e-01	4.9170010e+02	8.72e-01	8.871e-03	0.0	14489
927	8.7310117e-01	2.7508233e+02	8.72e-01	8.053e-03	0.0	14487
928	8.7183751e-01	8.1776740e+03	8.71e-01	3.778e-02	0.0	14471
929	8.7043723e-01	6.8564900e+02	8.69e-01	9.580e-03	-0.3	14481
930	8.7013592e-01	7.2838967e+02	8.69e-01	9.738e-03	0.0	14477
931	8.6999637e-01	4.7656223e+02	8.69e-01	8.789e-03	0.0	14475
932	8.6933579e-01	1.7988670e+03	8.68e-01	1.376e-02	0.0	14475
933	8.6915791e-01	1.0042691e+03	8.68e-01	1.077e-02	-0.3	14477
934	8.6903443e-01	3.0951297e+03	8.68e-01	1.864e-02	0.0	14476

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935	8.6883904e-01	1.2264769e+03	8.68e-01	1.160e-02	0.0	14475
936	8.6872432e-01	5.0707055e+02	8.68e-01	8.894e-03	0.0	14475
937	8.6860833e-01	4.8458734e+02	8.68e-01	8.809e-03	0.0	14475
938	8.6804272e-01	2.2609707e+03	8.67e-01	1.549e-02	0.0	14468
939	8.6801664e-01	2.0995621e+03	8.67e-01	1.488e-02	-0.3	14469
940	5.5004230e-01	4.1601261e+03	5.49e-01	1.868e-02	0.0	24827
941	5.1092562e-01	3.4883175e+03	5.10e-01	1.672e-02	0.0	23069
942	4.9810109e-01	6.3013601e+03	4.97e-01	2.723e-02	0.0	21625
943	4.9288234e-01	9.8266861e+03	4.92e-01	4.056e-02	0.0	20579
944	4.8883552e-01	9.4713616e+03	4.88e-01	3.921e-02	0.0	20013
945	4.8430635e-01	2.0316582e+03	4.83e-01	1.120e-02	0.0	19724
946	4.8281949e-01	4.0075353e+02	4.82e-01	5.065e-03	0.0	19477
947	4.7954383e-01	1.3447328e+03	4.79e-01	8.630e-03	0.0	18801
948	4.7972654e-01	1.2013093e+04	4.79e-01	4.885e-02	-0.3	17504
949	4.7394845e-01	2.4513730e+02	4.73e-01	4.545e-03	-0.3	17394
950	4.7288625e-01	2.2481900e+02	4.72e-01	4.456e-03	0.0	17334
951	4.7121497e-01	9.2467147e+02	4.70e-01	7.077e-03	0.0	16971
952	4.7126271e-01	5.3197758e+03	4.70e-01	2.365e-02	-0.3	16464
953	4.7199806e-01	1.0097365e+04	4.71e-01	4.162e-02	-0.3	16379
954	4.6826917e-01	1.0852381e+03	4.67e-01	7.695e-03	0.0	16330
955	4.6796054e-01	2.4370762e+02	4.67e-01	4.527e-03	0.0	16295
956	4.6767657e-01	1.7772228e+02	4.67e-01	4.278e-03	0.0	16245
957	4.6358080e-01	6.9065315e+02	4.63e-01	6.333e-03	0.0	15303
958	4.6448023e-01	2.9622803e+03	4.63e-01	1.480e-02	-0.3	15307
959	4.6476300e-01	3.4814254e+03	4.64e-01	1.679e-02	0.0	15291
960	4.6177818e-01	3.1128933e+03	4.61e-01	1.538e-02	0.0	15241
961	4.6105681e-01	1.2869982e+03	4.60e-01	8.503e-03	0.0	15230
962	4.6090904e-01	2.9198023e+02	4.60e-01	4.755e-03	0.0	15220
963	4.6077854e-01	1.8477436e+02	4.60e-01	4.349e-03	0.0	15203
964	4.5995743e-01	1.4333589e+03	4.59e-01	9.035e-03	0.0	15053
965	4.6026392e-01	4.2201787e+03	4.59e-01	1.953e-02	-0.3	15036
966	4.5970387e-01	1.9629629e+03	4.59e-01	1.103e-02	0.0	15019
967	4.5946875e-01	1.3624371e+02	4.58e-01	4.150e-03	0.0	15010
968	4.5940691e-01	1.3170334e+02	4.58e-01	4.132e-03	0.0	15001
969	4.5842433e-01	9.5026626e+02	4.57e-01	7.213e-03	0.0	14880
970	4.5902621e-01	4.0019223e+03	4.58e-01	1.870e-02	-0.3	14863
971	4.5812867e-01	1.7516283e+03	4.57e-01	1.023e-02	-0.3	14871
972	4.5791487e-01	3.2714493e+02	4.57e-01	4.865e-03	0.0	14867
973	4.5784213e-01	2.7637926e+02	4.57e-01	4.674e-03	0.0	14863
974	4.5740644e-01	3.7190194e+02	4.56e-01	5.033e-03	0.0	14812
975	4.5724681e-01	1.2891519e+03	4.56e-01	8.483e-03	-0.3	14798
976	4.5726841e-01	1.3865070e+03	4.56e-01	8.851e-03	0.0	14789
977	3.0624613e-01	1.6964160e+03	3.05e-01	8.181e-03	0.0	15005
978	2.8929378e-01	1.8289176e+03	2.88e-01	8.926e-03	0.0	15789
979	2.8387472e-01	3.5820448e+03	2.83e-01	1.550e-02	0.0	16210
980	2.8248458e-01	6.0194337e+03	2.81e-01	2.470e-02	0.0	16420
981	2.7990917e-01	4.4211041e+03	2.79e-01	1.869e-02	0.0	16413
982	2.7817122e-01	6.2749376e+02	2.77e-01	4.408e-03	0.0	16408
983	2.7759522e-01	1.9336090e+02	2.77e-01	2.776e-03	0.0	16395
984	2.7515286e-01	1.0267731e+03	2.74e-01	5.940e-03	0.0	16228
985	2.7478293e-01	1.5488595e+03	2.74e-01	7.908e-03	-0.3	16098
986	2.7450344e-01	2.4853306e+03	2.74e-01	1.143e-02	0.0	16029
987	2.7397024e-01	1.5461370e+03	2.73e-01	7.894e-03	0.0	16003
988	2.7365189e-01	3.4726600e+02	2.73e-01	3.380e-03	0.0	15976

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989	2.7343343e-01	1.6691970e+02	2.72e-01	2.702e-03	0.0	15941
990	2.7218376e-01	1.3476513e+03	2.71e-01	7.159e-03	0.0	15737
991	2.7263589e-01	3.5146487e+03	2.72e-01	1.532e-02	-0.3	15667
992	2.7178541e-01	1.4291405e+03	2.71e-01	7.467e-03	0.0	15647
993	2.7154202e-01	1.0229036e+02	2.71e-01	2.472e-03	0.0	15634
994	2.7144203e-01	1.0168122e+02	2.70e-01	2.470e-03	0.0	15621
995	2.6924914e-01	1.8138087e+03	2.68e-01	8.958e-03	0.0	15282
996	2.7002314e-01	4.2295598e+03	2.69e-01	1.804e-02	-0.3	15267
997	2.6911537e-01	2.9353126e+03	2.68e-01	1.317e-02	0.0	15264
998	2.6854712e-01	1.9868648e+02	2.68e-01	2.862e-03	0.0	15255
999	2.6849709e-01	1.1377751e+02	2.67e-01	2.542e-03	0.0	15252
1000	2.6795741e-01	2.8246848e+02	2.67e-01	3.166e-03	0.0	15150

ERROR EXIT -- Too many iterations

Products with A	:	1383	Total time (secs)	:	134.9
Products with A'	:	1002	Project time (secs)	:	10.9
Newton iterations	:	16	Mat-vec time (secs)	:	112.4
Line search its	:	658	Subspace iterations	:	0

/Tools/mat\_toolbox/spgl1-slim/spgl1.m

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SPGL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

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No. rows	:	12800	No. columns	:	73051
Initial tau	:	2.66e+05	Two-norm of b	:	4.14e+03
Optimality tol	:	1.00e-04	Target one-norm of x	:	2.66e+05
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	4.1432961e+03	7.1453997e+00	2.31e+02	0.0	0	0
1	4.0824709e+03	7.2367979e+00	2.28e+02	0.0	71661	0
2	1.6156259e+03	2.2759943e+01	1.17e+02	0.0	48927	0
3	1.1068307e+03	1.8195130e+01	5.20e+01	0.0	42937	0
4	9.0459205e+02	3.1367815e+01	5.59e+01	0.0	34585	0
5	7.5489703e+02	2.1118195e+01	3.01e+01	0.0	29586	0
6	6.8832007e+02	5.2989794e+01	5.15e+01	0.0	24920	0
7	6.9798609e+02	8.2811828e+01	8.23e+01	0.0	25758	0
8	5.4247114e+02	2.2711782e+01	1.75e+01	0.0	24572	0
9	5.1933161e+02	1.2626617e+01	1.14e+01	0.0	23745	0
10	4.8328235e+02	1.2566825e+01	1.02e+01	0.0	22263	0
11	3.5725357e+02	1.1516240e+02	3.00e+01	0.0	16440	0
12	3.7489484e+02	2.3495989e+02	6.49e+01	-0.3	20439	0
13	3.2596813e+02	2.1624980e+02	4.61e+01	0.0	21961	0
14	2.9782475e+02	2.5112664e+01	6.90e+00	0.0	20756	0
15	2.9354209e+02	1.4937959e+01	5.12e+00	0.0	20001	0
16	2.8037641e+02	1.6586982e+01	5.05e+00	0.0	18665	0
17	2.6172882e+02	2.7944009e+02	3.81e+01	0.0	16155	0
18	2.3744754e+02	1.6346300e+02	1.95e+01	-0.3	17765	0
19	2.2765139e+02	4.6903148e+01	6.68e+00	0.0	18110	0
20	2.2445204e+02	1.9183762e+01	3.91e+00	0.0	17536	0
21	2.1779121e+02	5.7802247e+01	7.19e+00	0.0	16827	0
22	2.1699488e+02	2.6130930e+02	2.51e+01	-0.3	16502	0

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23	2.1159737e+02	1.4282922e+02	1.40e+01	-0.3	16529	0
24	2.0890084e+02	1.7084311e+01	3.35e+00	0.0	16471	0
25	2.0773453e+02	1.7039424e+01	3.32e+00	0.0	16403	0
26	1.8959147e+02	1.1758435e+02	9.68e+00	0.0	15523	0
27	1.9234525e+02	3.4388167e+02	2.57e+01	-0.3	15849	0
28	1.8817926e+02	2.9959203e+02	2.17e+01	0.0	15997	0
29	1.8404220e+02	1.8806520e+01	2.90e+00	0.0	15860	0
30	1.8334844e+02	1.8681859e+01	2.88e+00	0.0	15801	0
31	1.7588634e+02	3.7119842e+01	3.78e+00	0.0	15432	0
32	1.7431872e+02	2.2070102e+02	1.42e+01	-0.3	15546	0
33	1.7020054e+02	6.5611300e+01	5.14e+00	-0.3	15904	0
34	1.6890782e+02	2.5741102e+01	2.94e+00	0.0	15842	0
35	1.6774492e+02	2.0162427e+01	2.62e+00	0.0	15634	0
36	1.6211961e+02	1.5022907e+02	8.92e+00	0.0	15158	0
37	1.6534922e+02	5.0024968e+02	2.72e+01	-0.3	15309	0
38	1.6064564e+02	2.7980439e+02	1.51e+01	0.0	15400	0
39	1.5862666e+02	2.0646127e+01	2.44e+00	0.0	15309	0
40	1.5816699e+02	2.0560224e+01	2.43e+00	0.0	15269	0
41	1.4698321e+02	2.9949390e+02	1.35e+01	0.0	14643	0
42	1.4747700e+02	4.3956702e+02	1.93e+01	-0.3	14975	0
43	1.4475852e+02	1.6362538e+02	7.77e+00	0.0	15076	0
44	1.4412219e+02	2.0723266e+01	2.13e+00	0.0	15003	0
45	1.4365332e+02	2.0962729e+01	2.13e+00	0.0	14956	0
46	1.3546359e+02	5.5003210e+02	2.02e+01	0.0	14298	0
47	1.3648868e+02	6.4996092e+02	2.40e+01	-0.3	14748	0
48	1.3083407e+02	5.9211143e+01	3.10e+00	0.0	14938	0
49	1.3052687e+02	2.5057553e+01	1.99e+00	0.0	14798	0
50	1.2935388e+02	2.3707686e+01	1.93e+00	0.0	14617	0
51	1.2344928e+02	3.3341248e+02	1.06e+01	0.0	14168	0
52	1.2710087e+02	7.1086795e+02	2.27e+01	-0.3	14671	0
53	1.2088322e+02	2.2435881e+02	7.27e+00	0.0	14859	0
54	1.2027249e+02	2.4338568e+01	1.76e+00	0.0	14645	0
55	1.1998684e+02	2.3549687e+01	1.73e+00	0.0	14538	0
56	1.1627983e+02	3.9635674e+02	1.11e+01	0.0	14013	0
57	1.1476712e+02	2.7414856e+02	7.83e+00	-0.3	14576	0
58	1.1376060e+02	7.0649351e+01	2.75e+00	0.0	14586	0
59	1.1346734e+02	2.0987376e+01	1.54e+00	0.0	14481	0
60	1.1275204e+02	3.3692502e+01	1.83e+00	0.0	14315	0
61	1.1183867e+02	6.4340249e+02	1.61e+01	0.0	14005	0
62	1.1191142e+02	6.4601068e+02	1.62e+01	-0.3	14251	0
63	1.0896629e+02	4.6231004e+01	2.02e+00	0.0	14276	0
64	1.0880185e+02	2.2547626e+01	1.48e+00	0.0	14185	0
65	1.0790488e+02	4.1153626e+01	1.88e+00	0.0	14073	0
66	1.0734795e+02	8.6034924e+02	1.96e+01	0.0	13714	0
67	1.0778597e+02	8.4532674e+02	1.94e+01	-0.3	14232	0
68	1.0103075e+02	8.9060179e+01	2.61e+00	0.0	14738	0
69	1.0079974e+02	3.1009557e+01	1.50e+00	0.0	14379	0
70	1.0025290e+02	3.2445854e+01	1.52e+00	0.0	14093	0
71	9.8670987e+01	2.0151001e+02	4.57e+00	0.0	13817	0
72	9.8405740e+01	2.3497274e+02	5.17e+00	-0.3	14058	0
73	9.7750818e+01	1.0312530e+02	2.73e+00	0.0	14014	0
74	9.7575538e+01	2.3123090e+01	1.29e+00	0.0	13972	0
75	9.7343523e+01	2.7490918e+01	1.37e+00	0.0	13928	0
76	9.4370670e+01	5.7956288e+02	1.05e+01	0.0	13595	0

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77	9.2820718e+01	2.2241347e+02	4.43e+00	-0.3	13948	0
78	9.2171215e+01	5.7782034e+01	1.75e+00	0.0	14044	0
79	9.2004243e+01	3.2231037e+01	1.34e+00	0.0	13943	0
80	9.1086555e+01	3.8167936e+01	1.41e+00	0.0	13787	0
81	9.0700515e+01	1.6565079e+02	3.37e+00	-0.3	13786	0
82	9.1348563e+01	4.0129921e+02	7.11e+00	-0.3	13916	0
83	9.0026770e+01	2.5712875e+02	4.73e+00	0.0	14001	0
84	8.9631594e+01	3.3158101e+01	1.31e+00	0.0	13906	0
85	8.9526227e+01	2.4064057e+01	1.17e+00	0.0	13843	0
86	8.8323361e+01	6.5307780e+01	1.75e+00	0.0	13664	0
87	8.8251955e+01	2.8400160e+02	4.95e+00	-0.3	13741	0
88	8.9382817e+01	6.4322865e+02	1.05e+01	0.0	13844	0
89	8.7552833e+01	1.8316799e+02	3.43e+00	0.0	13906	0
90	8.7327038e+01	2.4829470e+01	1.14e+00	0.0	13802	0
91	8.7220471e+01	2.5125922e+01	1.14e+00	0.0	13755	0
92	8.4999293e+01	1.9085989e+02	3.35e+00	0.0	13532	0
93	8.5245623e+01	3.4220650e+02	5.44e+00	-0.3	13689	0
94	8.4531373e+01	1.7980272e+02	3.17e+00	0.0	13724	0
95	8.4347063e+01	2.4747305e+01	1.09e+00	0.0	13682	0
96	8.4240000e+01	2.6711124e+01	1.11e+00	0.0	13652	0
97	8.3284394e+01	4.8620075e+02	7.08e+00	0.0	13505	0
98	8.3115658e+01	4.0532417e+02	6.01e+00	-0.3	13615	0
99	8.2429117e+01	5.7907770e+01	1.48e+00	0.0	13655	0
100	8.2344585e+01	2.5544980e+01	1.06e+00	0.0	13618	0
101	8.1946973e+01	2.7314135e+01	1.08e+00	0.0	13573	0
102	8.1041693e+01	8.5364979e+02	1.12e+01	-0.3	13393	0
103	7.9365802e+01	1.9248378e+02	2.98e+00	-0.3	13908	0
104	7.8896087e+01	6.5819662e+01	1.47e+00	0.0	13895	0
105	7.8714676e+01	2.7315965e+01	1.02e+00	0.0	13732	0
106	7.8223048e+01	9.0217508e+01	1.74e+00	0.0	13541	0
107	7.8539760e+01	4.4922842e+02	5.90e+00	-0.3	13523	0
108	7.7891122e+01	3.0246811e+02	4.15e+00	-0.3	13706	0
109	7.7567256e+01	6.5781076e+01	1.44e+00	0.0	13612	0
110	7.7491080e+01	2.7358873e+01	1.00e+00	0.0	13573	0
111	7.7213163e+01	4.8634613e+01	1.23e+00	0.0	13504	0
112	7.6950541e+01	3.3932097e+02	4.46e+00	-0.3	13519	0
113	7.6722826e+01	8.1199936e+01	1.58e+00	-0.3	13552	0
114	7.6599893e+01	2.6851177e+01	9.80e-01	0.0	13521	0
115	7.6446756e+01	4.7271546e+01	1.20e+00	0.0	13481	0
116	7.6517808e+01	7.7818589e+02	9.24e+00	0.0	13403	0
117	7.5511691e+01	1.2433733e+02	2.01e+00	-0.3	13457	0
118	7.5292198e+01	2.7464525e+01	9.64e-01	0.0	13471	0
119	7.5204154e+01	2.7636280e+01	9.64e-01	0.0	13453	0
120	7.4073304e+01	1.1044510e+02	1.80e+00	0.0	13358	0
121	7.4163535e+01	3.8979436e+02	4.69e+00	-0.3	13443	0
122	7.4046195e+01	4.0324721e+02	4.82e+00	0.0	13456	0
123	7.3659202e+01	5.4915627e+01	1.22e+00	0.0	13433	0
124	7.3603333e+01	2.9107897e+01	9.53e-01	0.0	13428	0
125	7.3415069e+01	2.8457017e+01	9.42e-01	0.0	13400	0
126	6.8622363e+01	9.9540633e+02	9.36e+00	0.0	12888	0
127	7.0896332e+01	1.6334112e+03	1.60e+01	-0.3	14177	0
128	6.5663641e+01	6.3515855e+02	5.72e+00	0.0	15493	0
129	6.4851279e+01	6.3336831e+01	1.07e+00	0.0	14664	0
130	6.4679520e+01	5.0161728e+01	9.61e-01	0.0	14313	0

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131	6.4088908e+01	1.1349732e+02	1.44e+00	0.0	13638	0
132	6.4106489e+01	3.3656472e+02	3.16e+00	-0.3	13591	0
133	6.4266691e+01	6.1470485e+02	5.34e+00	0.0	13612	0
134	6.3658749e+01	1.0434091e+02	1.36e+00	0.0	13564	0
135	6.3594285e+01	3.2390983e+01	8.08e-01	0.0	13532	0
136	6.3524086e+01	2.7744661e+01	7.72e-01	0.0	13496	0
137	6.1948075e+01	5.3744250e+02	4.41e+00	0.0	13119	0
138	6.1677237e+01	4.7348639e+02	3.93e+00	-0.3	13598	0
139	6.1115931e+01	2.0564965e+02	1.99e+00	0.0	13578	0
140	6.1009602e+01	5.1774312e+01	9.02e-01	0.0	13502	0
141	6.0916920e+01	6.3512106e+01	9.82e-01	0.0	13444	0
142	6.0630511e+01	4.4548416e+02	3.61e+00	0.0	13291	0
143	6.0469188e+01	3.7209802e+02	3.09e+00	-0.3	13507	0
144	6.0190173e+01	9.6045224e+01	1.19e+00	0.0	13488	0
145	6.0143310e+01	3.0400879e+01	7.38e-01	0.0	13456	0
146	5.9995286e+01	4.3366124e+01	8.24e-01	0.0	13371	0
147	5.9337161e+01	4.2307902e+02	3.32e+00	0.0	13168	0
148	5.9575557e+01	7.4790268e+02	5.52e+00	-0.3	13297	0
149	5.9004321e+01	2.3989654e+02	2.09e+00	0.0	13291	0
150	5.8927142e+01	3.8998901e+01	7.75e-01	0.0	13252	0
151	5.8884038e+01	3.9115673e+01	7.75e-01	0.0	13228	0
152	5.8248925e+01	5.7232167e+02	4.16e+00	0.0	13104	0
153	5.8071088e+01	3.6150376e+02	2.80e+00	-0.3	13284	0
154	5.7862641e+01	1.0207898e+02	1.15e+00	0.0	13284	0
155	5.7815205e+01	3.6914300e+01	7.42e-01	0.0	13259	0
156	5.7656363e+01	7.7409342e+01	9.93e-01	0.0	13195	0
157	5.7575836e+01	7.3695411e+02	5.10e+00	0.0	13102	0
158	5.7357606e+01	5.1537236e+02	3.70e+00	-0.3	13199	0
159	5.6975670e+01	9.1083093e+01	1.06e+00	0.0	13179	0
160	5.6939438e+01	3.3933985e+01	7.09e-01	0.0	13164	0
161	5.6780677e+01	4.6418267e+01	7.83e-01	0.0	13130	0
162	5.6642354e+01	5.0614090e+02	3.55e+00	-0.3	13086	0
163	5.6379486e+01	1.1936341e+02	1.21e+00	-0.3	13145	0
164	5.6290949e+01	6.6012622e+01	8.89e-01	0.0	13123	0
165	5.6235720e+01	3.5442976e+01	7.06e-01	0.0	13110	0
166	5.5961179e+01	8.4490864e+01	9.92e-01	0.0	13079	0
167	5.6290178e+01	7.4923662e+02	4.95e+00	-0.3	13107	0
168	5.5691241e+01	8.6407332e+01	9.92e-01	-0.3	13240	0
169	5.5564557e+01	6.3268846e+01	8.56e-01	0.0	13190	0
170	5.5469658e+01	3.2328748e+01	6.76e-01	0.0	13120	0
171	5.5293911e+01	1.2267780e+02	1.19e+00	0.0	13062	0
172	5.5230547e+01	2.0053311e+02	1.64e+00	-0.3	13075	0
173	5.5278001e+01	4.9304435e+02	3.32e+00	0.0	13064	0
174	5.5116367e+01	1.8860981e+02	1.56e+00	0.0	13059	0
175	5.5058151e+01	3.0402068e+01	6.58e-01	0.0	13058	0
176	5.5027122e+01	3.0426573e+01	6.58e-01	0.0	13054	0
177	5.3507453e+01	2.1229211e+02	1.61e+00	0.0	12933	0
178	5.4255965e+01	1.0352910e+03	6.21e+00	-0.3	13038	0
179	5.3881965e+01	9.8059300e+02	5.83e+00	0.0	13141	0
180	5.3247195e+01	3.7134278e+01	6.67e-01	0.0	13110	0
181	5.3221948e+01	3.7484258e+01	6.69e-01	0.0	13082	0
182	5.2994346e+01	6.0625690e+01	7.85e-01	0.0	13001	0
183	5.2878280e+01	2.3209161e+02	1.69e+00	-0.3	13029	0
184	5.2999369e+01	5.4083207e+02	3.32e+00	-0.3	13071	0

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185	5.2779717e+01	2.9981661e+02	2.04e+00	0.0	13076	0
186	5.2666913e+01	3.8352154e+01	6.63e-01	0.0	13044	0
187	5.2642168e+01	3.5451705e+01	6.48e-01	0.0	13024	0
188	5.2432100e+01	8.3953303e+01	8.95e-01	0.0	12976	0
189	5.2342533e+01	5.5657409e+02	3.33e+00	-0.3	12988	0
190	5.2139518e+01	1.4342468e+02	1.19e+00	-0.3	13065	0
191	5.2075432e+01	8.7067900e+01	9.02e-01	0.0	13040	0
192	5.2033047e+01	3.1413250e+01	6.18e-01	0.0	13024	0
193	5.1880654e+01	1.3567193e+02	1.14e+00	0.0	12983	0
194	5.1809561e+01	3.2468057e+02	2.10e+00	-0.3	13006	0
195	5.2030530e+01	8.9693035e+02	5.02e+00	0.0	12989	0
196	5.1772543e+01	4.8910572e+02	2.92e+00	0.0	13024	0
197	5.1621127e+01	6.5706663e+01	7.83e-01	0.0	13010	0
198	5.1598671e+01	3.1963983e+01	6.14e-01	0.0	12999	0
199	5.1325265e+01	7.1017150e+01	8.03e-01	0.0	12952	0
200	5.1358180e+01	4.3834774e+02	2.63e+00	-0.3	12979	0

NOTE: solution not actually optimal, best objective value is 5.1325265e+01  
 ERROR EXIT -- Too many iterations

Products with A	:	287	Total time (secs)	:	27.7
Products with A'	:	201	Project time (secs)	:	2.3
Newton iterations	:	0	Mat-vec time (secs)	:	23.0
Line search its	:	177	Subspace iterations	:	0

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PQNL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

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No. rows	:	12800	No. columns	:	73051
Initial tau	:	2.66e+05	Two-norm of b	:	4.14e+03
Optimality tol	:	1.00e-04	Target one-norm of x	:	2.66e+05
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	4.1432961e+03	7.1453997e+00	2.31e+02	0.0	0	0

Inside of minConf\_PQN

Iteration	FunEvals	Projections	Step Length	rNorm2	O
1	1	4	1.00000e+00	3.48929e+03	4.478
2	1	37	1.00000e+00	1.03946e+03	1.269
3	1	68	1.00000e+00	8.29859e+02	7.036
4	1	95	1.00000e+00	6.40031e+02	4.108
5	1	126	1.00000e+00	5.13791e+02	2.772
6	1	167	1.00000e+00	4.29614e+02	1.899
7	1	210	1.00000e+00	3.82696e+02	1.477
8	1	259	1.00000e+00	3.42151e+02	1.221
9	1	314	1.00000e+00	3.07440e+02	1.009
10	1	371	1.00000e+00	2.79150e+02	8.356
11	1	430	1.00000e+00	2.56471e+02	7.175
12	1	485	1.00000e+00	2.36499e+02	6.457
13	1	551	1.00000e+00	2.19231e+02	5.794
14	1	616	1.00000e+00	2.04384e+02	5.116
15	1	676	1.00000e+00	1.91962e+02	4.545
16	1	736	1.00000e+00	1.81600e+02	4.158
17	1	817	1.00000e+00	1.72067e+02	3.903

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18	1	884	1.000000e+00	1.63446e+02	3.620
19	1	953	1.000000e+00	1.55258e+02	3.366
20	1	1038	1.000000e+00	1.47624e+02	3.112
21	1	1127	1.000000e+00	1.40761e+02	2.891
22	1	1232	1.000000e+00	1.34825e+02	2.667
23	1	1313	1.000000e+00	1.29033e+02	2.455
24	1	1390	1.000000e+00	1.23948e+02	2.321
25	1	1486	1.000000e+00	1.19299e+02	2.181
26	1	1563	1.000000e+00	1.14924e+02	2.021
27	1	1636	1.000000e+00	1.10652e+02	1.985
28	1	1737	1.000000e+00	1.06932e+02	1.902
29	1	1822	1.000000e+00	1.03060e+02	1.812
30	1	1952	1.000000e+00	9.96368e+01	1.721
31	1	2081	1.000000e+00	9.62315e+01	1.664
32	1	2190	1.000000e+00	9.31566e+01	1.603
33	1	2295	1.000000e+00	9.02446e+01	1.505
34	1	2421	1.000000e+00	8.75187e+01	1.386
35	1	2514	1.000000e+00	8.49778e+01	1.322
36	1	2623	1.000000e+00	8.28097e+01	1.255
37	1	2722	1.000000e+00	8.05837e+01	1.186
38	1	2825	1.000000e+00	7.85191e+01	1.142
39	1	2940	1.000000e+00	7.64403e+01	1.136
40	1	3082	1.000000e+00	7.43338e+01	1.135
41	1	3223	1.000000e+00	7.23335e+01	1.098
42	1	3346	1.000000e+00	7.04907e+01	1.032
43	1	3470	1.000000e+00	6.85939e+01	9.898
44	1	3588	1.000000e+00	6.68695e+01	9.795
45	1	3705	1.000000e+00	6.52280e+01	9.440
46	1	3885	1.000000e+00	6.34766e+01	9.201
47	1	4027	1.000000e+00	6.19659e+01	9.069
48	1	4168	1.000000e+00	6.04195e+01	8.639
49	1	4333	1.000000e+00	5.89663e+01	8.166
50	1	4476	1.000000e+00	5.76056e+01	7.915
51	1	4629	1.000000e+00	5.63745e+01	7.691
52	1	4733	1.000000e+00	5.50327e+01	7.591
53	1	4904	1.000000e+00	5.38653e+01	7.311
54	1	5036	1.000000e+00	5.26127e+01	7.041
55	1	5167	1.000000e+00	5.14596e+01	6.937
56	1	5335	1.000000e+00	5.04393e+01	6.575
57	1	5487	1.000000e+00	4.93945e+01	6.309
58	1	5624	1.000000e+00	4.84097e+01	6.282
59	1	5753	1.000000e+00	4.74648e+01	6.273
60	1	5918	1.000000e+00	4.65500e+01	5.959
61	1	6071	1.000000e+00	4.56215e+01	5.494
62	1	6236	1.000000e+00	4.48129e+01	5.445
63	1	6432	1.000000e+00	4.39803e+01	5.441
64	1	6673	1.000000e+00	4.31417e+01	5.407
65	1	6833	1.000000e+00	4.23182e+01	5.290
66	1	7015	1.000000e+00	4.15346e+01	5.112
67	1	7190	1.000000e+00	4.07115e+01	5.091
68	1	7364	1.000000e+00	4.00213e+01	4.966
69	1	7599	1.000000e+00	3.92801e+01	4.716
70	1	7796	1.000000e+00	3.85786e+01	4.675
71	1	7990	1.000000e+00	3.79096e+01	4.579

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72	1	8159	1.00000e+00	3.72834e+01	4.340
73	1	8306	1.00000e+00	3.65922e+01	4.135
74	1	8492	1.00000e+00	3.60153e+01	4.094
75	1	8701	1.00000e+00	3.54381e+01	4.114
76	1	8881	1.00000e+00	3.48637e+01	4.071
77	1	9034	1.00000e+00	3.42892e+01	3.940
78	1	9262	1.00000e+00	3.36780e+01	3.921
79	1	9441	1.00000e+00	3.31380e+01	3.878
80	1	9664	1.00000e+00	3.25945e+01	3.730
81	1	9936	1.00000e+00	3.20803e+01	3.613
82	1	10162	1.00000e+00	3.15463e+01	3.656
83	1	10454	1.00000e+00	3.10760e+01	3.693
84	1	10686	1.00000e+00	3.05285e+01	3.618
85	1	10896	1.00000e+00	3.00452e+01	3.515
86	1	11085	1.00000e+00	2.95979e+01	3.305
87	1	11270	1.00000e+00	2.91530e+01	3.194
88	1	11546	1.00000e+00	2.87143e+01	3.365
89	1	11803	1.00000e+00	2.83165e+01	3.307
90	1	12073	1.00000e+00	2.78712e+01	3.101
91	1	12337	1.00000e+00	2.74526e+01	3.068
92	1	12594	1.00000e+00	2.70396e+01	3.119
93	1	12805	1.00000e+00	2.66351e+01	3.084
94	1	13099	1.00000e+00	2.62048e+01	3.061
95	1	13308	1.00000e+00	2.58092e+01	2.926
96	1	13551	1.00000e+00	2.54326e+01	2.784
97	1	13824	1.00000e+00	2.50629e+01	2.782
98	1	14113	1.00000e+00	2.47031e+01	2.769
99	1	14272	1.00000e+00	2.43471e+01	2.672
100	1	14519	1.00000e+00	2.39766e+01	2.620
101	1	14755	1.00000e+00	2.36377e+01	2.603
102	1	14972	1.00000e+00	2.32877e+01	2.592
103	1	15247	1.00000e+00	2.29534e+01	2.518
104	1	15497	1.00000e+00	2.25923e+01	2.493
105	1	15802	1.00000e+00	2.23038e+01	2.464
106	1	16138	1.00000e+00	2.19996e+01	2.362
107	1	16394	1.00000e+00	2.16927e+01	2.386
108	1	16602	1.00000e+00	2.14202e+01	2.324
109	1	16777	1.00000e+00	2.11284e+01	2.241
110	1	17009	1.00000e+00	2.08576e+01	2.098
111	1	17266	1.00000e+00	2.06012e+01	2.090
112	1	17501	1.00000e+00	2.03424e+01	2.123
113	1	17694	1.00000e+00	2.00682e+01	2.110
114	1	17877	1.00000e+00	1.98335e+01	1.964
115	1	18172	1.00000e+00	1.95758e+01	1.922
116	1	18523	1.00000e+00	1.93554e+01	1.962
117	1	18799	1.00000e+00	1.91086e+01	1.921
118	1	19080	1.00000e+00	1.88670e+01	1.939
119	1	19346	1.00000e+00	1.86253e+01	1.963
120	1	19658	1.00000e+00	1.83799e+01	1.964
121	1	19940	1.00000e+00	1.81668e+01	1.879
122	1	20205	1.00000e+00	1.79277e+01	1.810
123	1	20498	1.00000e+00	1.77184e+01	1.825
124	1	20797	1.00000e+00	1.75311e+01	1.783
125	1	21083	1.00000e+00	1.73122e+01	1.752

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126	1	21344	1.00000e+00	1.71232e+01	1.701
127	1	21605	1.00000e+00	1.69130e+01	1.714
128	1	21851	1.00000e+00	1.67267e+01	1.663
129	1	22243	1.00000e+00	1.64929e+01	1.643
130	1	22409	1.00000e+00	1.62982e+01	1.651
131	1	22718	1.00000e+00	1.60825e+01	1.677
132	1	23007	1.00000e+00	1.58804e+01	1.605
133	1	23312	1.00000e+00	1.57039e+01	1.520
134	1	23547	1.00000e+00	1.55269e+01	1.501
135	1	23794	1.00000e+00	1.53498e+01	1.540
136	1	24079	1.00000e+00	1.51601e+01	1.515
137	1	24356	1.00000e+00	1.49787e+01	1.465
138	1	24617	1.00000e+00	1.47988e+01	1.446
139	1	24843	1.00000e+00	1.46268e+01	1.417
140	1	25155	1.00000e+00	1.44399e+01	1.415
141	1	25569	1.00000e+00	1.42621e+01	1.488
142	1	25923	1.00000e+00	1.40753e+01	1.504
143	1	26328	1.00000e+00	1.38905e+01	1.484
144	1	26696	1.00000e+00	1.37027e+01	1.456
145	1	27073	1.00000e+00	1.35121e+01	1.477
146	1	27475	1.00000e+00	1.33382e+01	1.492
147	1	27783	1.00000e+00	1.31575e+01	1.490
148	1	28182	1.00000e+00	1.29928e+01	1.400
149	1	28489	1.00000e+00	1.28395e+01	1.307
150	1	28787	1.00000e+00	1.27015e+01	1.321
151	1	29218	1.00000e+00	1.25563e+01	1.329
152	1	29527	1.00000e+00	1.24059e+01	1.280
153	1	29812	1.00000e+00	1.22700e+01	1.212
154	1	30253	1.00000e+00	1.21318e+01	1.196
155	1	30646	1.00000e+00	1.20038e+01	1.208
156	1	31089	1.00000e+00	1.18546e+01	1.250
157	1	31382	1.00000e+00	1.17112e+01	1.227
158	1	31730	1.00000e+00	1.15624e+01	1.167
159	1	32031	1.00000e+00	1.14377e+01	1.134
160	1	32445	1.00000e+00	1.13036e+01	1.146
161	1	32776	1.00000e+00	1.11774e+01	1.141
162	1	33098	1.00000e+00	1.10456e+01	1.148
163	1	33463	1.00000e+00	1.09116e+01	1.158
164	1	33926	1.00000e+00	1.07910e+01	1.103
165	1	34364	1.00000e+00	1.06711e+01	1.052
166	1	34765	1.00000e+00	1.05612e+01	1.075
167	1	35114	1.00000e+00	1.04422e+01	1.101
168	1	35476	1.00000e+00	1.03286e+01	1.043
169	1	35878	1.00000e+00	1.02098e+01	9.846
170	1	36226	1.00000e+00	1.01079e+01	9.638
171	1	36645	1.00000e+00	1.00020e+01	9.566
172	1	37174	1.00000e+00	9.88252e+00	1.007
173	1	37610	1.00000e+00	9.76732e+00	1.041
174	1	38080	1.00000e+00	9.64840e+00	1.014
175	1	38474	1.00000e+00	9.52862e+00	1.007
176	1	38877	1.00000e+00	9.42093e+00	1.023
177	1	39253	1.00000e+00	9.30417e+00	1.006
178	1	39681	1.00000e+00	9.18243e+00	9.894
179	1	40094	1.00000e+00	9.06585e+00	9.751

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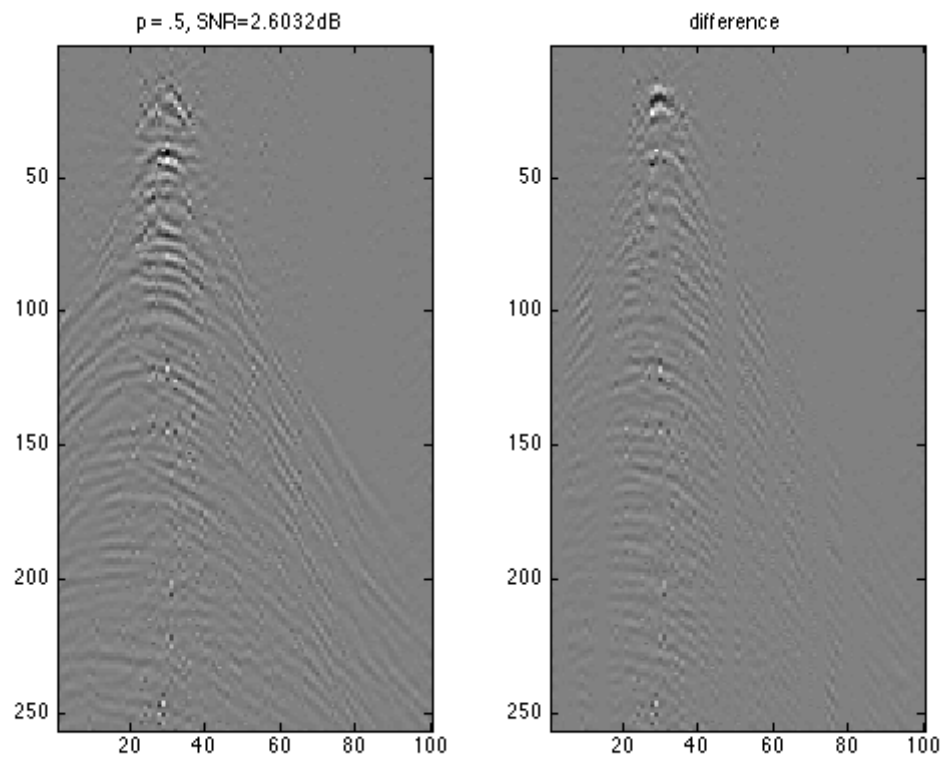
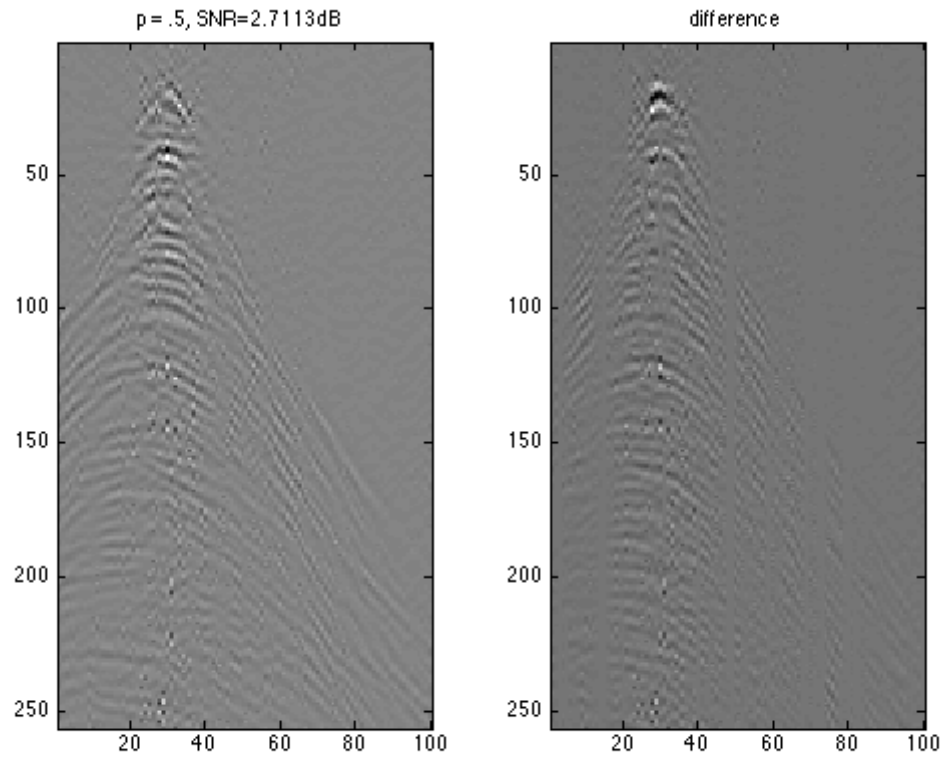


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180	1	40511	1.00000e+00	8.95564e+00	9.695	
181	1	40906	1.00000e+00	8.85389e+00	9.143	
182	1	41247	1.00000e+00	8.75439e+00	8.483	
183	1	41667	1.00000e+00	8.66170e+00	8.437	
184	1	42030	1.00000e+00	8.57157e+00	8.584	
185	1	42516	1.00000e+00	8.47427e+00	8.477	
186	1	43001	1.00000e+00	8.38393e+00	8.430	
187	1	43403	1.00000e+00	8.29369e+00	8.309	
188	1	43842	1.00000e+00	8.19475e+00	8.645	
189	1	44277	1.00000e+00	8.10869e+00	8.635	
190	1	44635	1.00000e+00	8.00923e+00	8.014	
191	1	44986	1.00000e+00	7.91759e+00	7.640	
192	1	45341	1.00000e+00	7.83305e+00	7.878	
193	1	45693	1.00000e+00	7.75356e+00	7.831	
194	1	46064	1.00000e+00	7.65849e+00	7.813	
195	1	46525	1.00000e+00	7.56577e+00	7.797	
196	1	46921	1.00000e+00	7.48297e+00	7.514	
197	1	47376	1.00000e+00	7.39628e+00	7.445	
198	1	47832	1.00000e+00	7.31783e+00	7.356	
199	1	48351	1.00000e+00	7.22423e+00	7.622	
200	1	48751	1.00000e+00	7.14430e+00	7.693	
200	7.1442995e+00	5.5018920e+02	1.11e-01	0.0	15240	0

ERROR EXIT -- Too many iterations

Products with A	:	202	Total time (secs) :	4748.5
Products with A'	:	202	Project time (secs) :	3477.0
Newton iterations	:	0	Mat-vec time (secs) :	21.3



---

## if given known strict sparse vector

```
[m n] = size(A); k = .2*round(n/log(m));
p = randperm(n); x0 = zeros(n,1); x0(p(1:k)) = sign(randn(k,1));
figure;plot(x0)
b0 = A*x0;

tau = norm(x0,1);

options = spgSetParms('optTol', 1e-4, 'iterations', 200);%, 'fid', fid);
xinit = zeros(size(A,2),1);

xestspg = spgll(A,b0,tau,[],xinit,options);
xestpqn = pqnl1_2(A,b0,tau,[],xinit,options);
snrspg = SNR(x0,xestspg);
snrpqn = SNR(x0,xestpqn);

figure('Name','strcit sparse vector SPG');
subplot(2,1,1);plot(xestspg);
title(strcat(['p = .5, SNR=' num2str(snrspg) 'dB']))
subplot(2,1,2);plot(xestspg - x0);
title('difference')

figure('Name','strcit sparse vector PQN');
subplot(2,1,1);plot(xestpqn);
title(strcat(['p = .5, SNR=' num2str(snrpqn) 'dB']))
subplot(2,1,2);plot(xestpqn - x0);
title('difference')
```

*Warning: Size vector should be a row vector with integer elements.*

*Warning: Integer operands are required for colon operator when used as index*

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SPGL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

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No. rows	:	12800	No. columns	:	73051
Initial tau	:	1.54e+03	Two-norm of b	:	2.30e+01
Optimality tol	:	1.00e-04	Target one-norm of x	:	1.54e+03
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	2.2983295e+01	9.9152203e+00	1.70e+00	0.0	0	0
1	1.6172234e+01	3.1470341e+01	2.42e+00	0.0	24297	0
2	8.0432346e+00	6.2639979e+01	1.35e+00	0.0	57291	0
3	3.8273537e+00	4.7577714e+01	2.46e-01	0.0	51259	0
4	3.3481923e+00	4.9939833e+01	2.04e-01	0.0	47409	0
5	2.7058522e+00	4.4698661e+01	1.26e-01	0.0	41137	0
6	1.9218015e+00	6.6505168e+01	9.42e-02	0.0	32246	0
7	2.1552011e+00	1.8378424e+02	2.83e-01	-0.3	30894	0
8	1.8829029e+00	2.0529265e+02	2.51e-01	0.0	31625	0
9	1.4912525e+00	2.4774376e+01	2.95e-02	0.0	30417	0

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10	1.4536404e+00	2.4790090e+01	2.85e-02	0.0	30043	0
11	1.2584324e+00	2.0080912e+01	2.31e-02	0.0	28178	0
12	1.3510264e+00	2.6913994e+02	1.80e-01	0.0	23979	0
13	8.9567683e-01	8.6828719e+01	6.23e-02	-0.3	26431	0
14	7.7777256e-01	2.1514441e+01	1.99e-02	0.0	26496	0
15	7.4543254e-01	1.6469659e+01	1.64e-02	0.0	26389	0
16	6.8871954e-01	2.8159899e+01	2.37e-02	0.0	25890	0
17	7.5378384e-01	2.5140905e+02	1.67e-01	0.0	24821	0
18	6.3766558e-01	1.4581970e+02	9.94e-02	-0.3	24869	0
19	5.9788175e-01	2.3102722e+01	1.98e-02	0.0	24717	0
20	5.9082983e-01	7.2565385e+00	9.45e-03	0.0	24654	0
21	5.6154186e-01	1.3795391e+01	1.35e-02	0.0	24344	0
22	5.5075731e-01	2.1642425e+02	1.44e-01	-0.3	23575	0
23	4.8450255e-01	6.5514544e+01	4.63e-02	-0.3	23643	0
24	4.6972586e-01	6.0182893e+00	7.68e-03	0.0	23603	0
25	4.6330700e-01	5.6782414e+00	7.43e-03	0.0	23545	0
26	4.2599137e-01	2.1859838e+01	1.76e-02	0.0	23206	0
27	4.1584732e-01	4.8224843e+01	3.46e-02	-0.3	23254	0
28	4.1545470e-01	1.0657013e+02	7.23e-02	0.0	23113	0
29	4.0233364e-01	7.0068020e+01	4.86e-02	0.0	23068	0
30	3.9355831e-01	1.0698782e+01	1.01e-02	0.0	23028	0
31	3.9021663e-01	4.4964828e+00	6.08e-03	0.0	23000	0
32	3.7246201e-01	1.4924647e+01	1.27e-02	0.0	22865	0
33	3.6323807e-01	8.6894815e+01	5.92e-02	-0.3	22832	0
34	3.5286317e-01	1.3291454e+01	1.15e-02	-0.3	22799	0
35	3.4873634e-01	4.0150888e+00	5.44e-03	0.0	22783	0
36	3.4076808e-01	5.3057313e+00	6.21e-03	0.0	22699	0
37	3.4540421e-01	3.0301106e+02	1.98e-01	0.0	21835	0
38	3.1559618e-01	2.4644253e+02	1.62e-01	-0.3	22296	0
39	2.2815017e-01	1.6938733e+01	1.28e-02	0.0	22012	0
40	2.2512754e-01	2.7585177e+00	3.59e-03	0.0	21993	0
41	2.1853771e-01	3.2443067e+00	3.86e-03	0.0	21934	0
42	2.0149366e-01	1.5431261e+01	1.16e-02	0.0	21852	0
43	2.0385948e-01	3.5697956e+01	2.47e-02	-0.3	21868	0
44	1.9474479e-01	2.2818255e+01	1.63e-02	0.0	21830	0
45	1.9069299e-01	5.2938618e+00	4.97e-03	0.0	21809	0
46	1.8932346e-01	2.0490811e+00	2.86e-03	0.0	21795	0
47	1.8286984e-01	5.9901200e+00	5.36e-03	0.0	21768	0
48	1.7981476e-01	2.9249587e+01	2.04e-02	-0.3	21771	0
49	1.8425834e-01	5.7436080e+01	3.86e-02	-0.3	21768	0
50	1.7349565e-01	8.8113217e+00	7.11e-03	0.0	21756	0
51	1.7228508e-01	1.8824850e+00	2.62e-03	0.0	21746	0
52	1.7039151e-01	1.8825595e+00	2.60e-03	0.0	21738	0
53	9.7142477e-02	3.4381338e+01	2.28e-02	0.0	21197	0
54	1.3689213e-01	1.0310877e+02	6.76e-02	-0.3	21543	0
55	8.5560207e-02	4.4507740e+01	2.94e-02	0.0	21294	0
56	7.4203996e-02	4.8098871e+00	3.71e-03	0.0	21302	0
57	7.3026134e-02	7.6654510e-01	1.08e-03	0.0	21294	0
58	7.0692285e-02	8.1201166e-01	1.09e-03	0.0	21265	0
59	6.6568304e-02	1.3354532e+01	9.16e-03	0.0	21289	0
60	6.4475369e-02	6.5481906e+00	4.76e-03	-0.3	21277	0
61	6.3375574e-02	2.3477302e+00	2.03e-03	0.0	21264	0
62	6.2814278e-02	8.3952804e-01	1.05e-03	0.0	21261	0
63	6.1564594e-02	3.2370991e+00	2.59e-03	0.0	21254	0

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64	6.2387361e-02	1.9917280e+01	1.34e-02	-0.3	21255	0
65	6.0107530e-02	1.2423837e+01	8.52e-03	-0.3	21250	0
66	5.8514680e-02	6.0026046e-01	8.58e-04	0.0	21246	0
67	5.8232753e-02	5.9644646e-01	8.54e-04	0.0	21245	0
68	5.0125034e-02	2.4292553e+00	1.98e-03	0.0	21200	0
69	5.2321357e-02	1.8439676e+01	1.23e-02	-0.3	21207	0
70	4.9116098e-02	1.2482642e+01	8.47e-03	-0.3	21199	0
71	4.7252367e-02	1.3760207e+00	1.27e-03	0.0	21192	0
72	4.6961324e-02	5.8601816e-01	7.58e-04	0.0	21191	0
73	4.6071581e-02	4.9644594e-01	6.94e-04	0.0	21184	0
74	3.9406541e-02	8.6357653e+00	5.88e-03	0.0	21153	0
75	3.8932251e-02	1.0486976e+01	7.10e-03	-0.3	21156	0
76	3.6306128e-02	3.3192645e+00	2.44e-03	0.0	21149	0
77	3.5933642e-02	3.7203418e-01	5.31e-04	0.0	21149	0
78	3.5655185e-02	3.7939686e-01	5.34e-04	0.0	21147	0
79	3.3075639e-02	3.6439434e+00	2.62e-03	0.0	21130	0
80	3.5882508e-02	1.5592655e+01	1.04e-02	-0.3	21132	0
81	3.3057304e-02	8.6092803e+00	5.83e-03	0.0	21132	0
82	3.1582538e-02	5.8848559e-01	6.36e-04	0.0	21129	0
83	3.1423093e-02	3.4327322e-01	4.76e-04	0.0	21129	0
84	3.0175594e-02	3.0251871e-01	4.40e-04	0.0	21120	0
85	3.1143107e-02	8.6985310e+00	5.81e-03	-0.3	21116	0
86	2.5316046e-02	9.2663362e-01	7.98e-04	-0.3	21111	0
87	2.4403154e-02	9.4467011e-01	8.06e-04	0.0	21106	0
88	2.3862669e-02	2.8667270e-01	3.78e-04	0.0	21105	0
89	2.3183358e-02	1.5099609e+00	1.16e-03	0.0	21105	0
90	2.3697309e-02	5.1314727e+00	3.51e-03	-0.3	21102	0
91	2.3131334e-02	4.6702159e+00	3.21e-03	0.0	21104	0
92	2.2216141e-02	4.9225208e-01	4.98e-04	0.0	21101	0
93	2.2093240e-02	2.2564948e-01	3.25e-04	0.0	21101	0
94	2.1440748e-02	2.2528134e-01	3.19e-04	0.0	21103	0
95	1.9526355e-02	8.5353377e+00	5.64e-03	-0.3	21101	0
96	1.6497122e-02	3.8973259e+00	2.65e-03	-0.3	21104	0
97	1.5498975e-02	7.6177264e-01	6.18e-04	0.0	21107	0
98	1.5353991e-02	2.1622150e-01	2.64e-04	0.0	21107	0
99	1.5020071e-02	1.6847194e-01	2.31e-04	0.0	21106	0
100	1.4316452e-02	3.7874371e+00	2.56e-03	0.0	21094	0
101	1.4393277e-02	4.7392694e+00	3.18e-03	-0.3	21096	0
102	1.3627840e-02	8.5592165e-01	6.64e-04	0.0	21094	0
103	1.3542119e-02	1.3636011e-01	1.98e-04	0.0	21096	0
104	1.3395742e-02	1.3708965e-01	1.97e-04	0.0	21095	0
105	1.0368448e-02	4.5248033e+00	3.00e-03	0.0	21080	0
106	1.0360072e-02	5.1130498e+00	3.39e-03	-0.3	21079	0
107	8.9286521e-03	6.3257986e-01	4.82e-04	0.0	21080	0
108	8.8387136e-03	1.1586773e-01	1.47e-04	0.0	21079	0
109	8.7160482e-03	9.6895481e-02	1.33e-04	0.0	21079	0
110	8.1426880e-03	1.0378427e+00	7.35e-04	0.0	21079	0
111	8.1646378e-03	1.6809462e+00	1.15e-03	-0.3	21078	0
112	7.7945714e-03	8.2842549e-01	5.99e-04	0.0	21078	0
113	7.6976818e-03	1.1803010e-01	1.38e-04	0.0	21078	0
114	7.6489241e-03	7.9831329e-02	1.13e-04	0.0	21079	0
115	7.2322527e-03	2.3805584e-01	2.13e-04	0.0	21073	0
116	7.2091831e-03	1.6791978e+00	1.14e-03	-0.3	21073	0
117	7.2012559e-03	1.8043000e+00	1.22e-03	-0.3	21075	0

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118	6.9052955e-03	1.6911892e-01	1.65e-04	0.0	21075	0
119	6.8737840e-03	6.8478514e-02	9.98e-05	0.0	21075	0
120	6.7288049e-03	6.9322779e-02	9.92e-05	0.0	21075	0
121	6.5536750e-03	5.7560653e+00	3.75e-03	0.0	21063	0
122	3.6950595e-03	2.0260325e+00	1.34e-03	-0.3	21062	0
123	2.9438581e-03	2.2966224e-01	1.73e-04	0.0	21063	0
124	2.8765455e-03	6.1918436e-02	6.34e-05	0.0	21063	0
125	2.7331040e-03	4.8670885e-02	5.35e-05	0.0	21064	0
126	2.6667009e-03	6.9488498e-01	4.71e-04	0.0	21063	0
127	2.8432154e-03	1.4982789e+00	9.91e-04	-0.3	21060	0
128	2.5307881e-03	3.8772662e-01	2.71e-04	0.0	21060	0
129	2.4888637e-03	2.6787192e-02	3.73e-05	0.0	21060	0
130	2.4728841e-03	2.5708714e-02	3.65e-05	0.0	21060	0
131	2.2531425e-03	1.5817303e-01	1.21e-04	0.0	21062	0

EXIT -- Optimal solution found

Products with A	:	184	Total time (secs)	:	18.3
Products with A'	:	132	Project time (secs)	:	1.4
Newton iterations	:	0	Mat-vec time (secs)	:	15.3
Line search its	:	93	Subspace iterations	:	0

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PQNL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

=====

No. rows	:	12800	No. columns	:	73051
Initial tau	:	1.54e+03	Two-norm of b	:	2.30e+01
Optimality tol	:	1.00e-04	Target one-norm of x	:	1.54e+03
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	2.2983295e+01	9.9152203e+00	1.70e+00	0.0	0	0

Inside of minConf\_PQN

Iteration	FunEvals	Projections	Step Length	rNorm2	O
1	1	4	5.00000e-01	1.27122e+01	1.412
2	1	27	1.00000e+00	5.76194e+00	8.441
3	1	46	1.00000e+00	4.13362e+00	3.989
4	1	69	1.00000e+00	2.95611e+00	2.487
5	1	94	1.00000e+00	2.18221e+00	1.704
6	1	127	1.00000e+00	1.79979e+00	1.234
7	1	158	1.00000e+00	1.58629e+00	9.775
8	1	195	1.00000e+00	1.31043e+00	7.552
9	1	246	1.00000e+00	1.10217e+00	5.963
10	1	301	1.00000e+00	9.36210e-01	4.937
11	1	338	1.00000e+00	8.09911e-01	4.210
12	1	398	1.00000e+00	6.93105e-01	3.816
13	1	453	1.00000e+00	5.85295e-01	3.128
14	1	503	1.00000e+00	5.02339e-01	2.662
15	1	549	1.00000e+00	4.38948e-01	2.302
16	1	602	1.00000e+00	3.73607e-01	2.022
17	1	674	1.00000e+00	3.16504e-01	1.742
18	1	728	1.00000e+00	2.66094e-01	1.531
19	1	804	1.00000e+00	2.24140e-01	1.334

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20	1	874	1.000000e+00	1.86610e-01	1.155
21	1	938	1.000000e+00	1.53911e-01	9.676
22	1	1001	1.000000e+00	1.26342e-01	8.253
23	1	1077	1.000000e+00	1.03524e-01	7.051
24	1	1144	1.000000e+00	8.36438e-02	5.821
25	1	1209	1.000000e+00	6.61780e-02	4.689
26	1	1273	1.000000e+00	5.12037e-02	3.909
27	1	1338	1.000000e+00	3.99736e-02	2.964
28	1	1391	1.000000e+00	3.09968e-02	2.209
29	1	1402	1.000000e+00	2.69035e-02	1.484
30	1	1443	1.000000e+00	2.07420e-02	1.353
31	1	1470	1.000000e+00	1.59006e-02	1.139
32	1	1486	1.000000e+00	1.33087e-02	7.839
33	1	1500	1.000000e+00	1.16916e-02	5.832
34	1	1514	1.000000e+00	1.04790e-02	4.868
35	1	1530	1.000000e+00	8.87916e-03	4.013
36	1	1546	1.000000e+00	7.33580e-03	3.368
37	1	1557	1.000000e+00	6.79667e-03	3.921
38	1	1565	1.000000e+00	6.49961e-03	2.754
39	1	1580	1.000000e+00	5.86269e-03	2.236
40	1	1591	1.000000e+00	5.47730e-03	1.967
41	1	1604	1.000000e+00	4.98557e-03	1.617
42	1	1616	1.000000e+00	4.38207e-03	1.423
43	1	1632	1.000000e+00	3.75653e-03	1.646
44	1	1640	1.000000e+00	3.59225e-03	1.230
45	1	1647	1.000000e+00	3.52033e-03	1.716
46	1	1659	1.000000e+00	3.19342e-03	1.239
47	1	1679	1.000000e+00	2.85540e-03	8.815
48	1	1689	1.000000e+00	2.67248e-03	8.001
49	1	1696	1.000000e+00	2.48591e-03	1.524
50	1	1708	1.000000e+00	2.14768e-03	7.623
51	1	1720	1.000000e+00	2.05168e-03	7.608
52	1	1728	1.000000e+00	1.98393e-03	6.093
53	1	1749	1.000000e+00	1.65374e-03	5.154
54	1	1769	1.000000e+00	1.39215e-03	4.218
55	1	1799	1.000000e+00	1.10265e-03	3.351
56	1	1823	1.000000e+00	8.45157e-04	2.816
57	1	1840	1.000000e+00	7.33649e-04	2.567
58	1	1848	1.000000e+00	7.06515e-04	2.126
59	1	1869	1.000000e+00	5.62398e-04	1.757
60	1	1881	1.000000e+00	5.17495e-04	1.878
61	1	1889	1.000000e+00	4.93285e-04	1.534
62	1	1894	1.000000e+00	4.80677e-04	1.628
63	1	1902	1.000000e+00	4.61929e-04	1.361
64	1	1907	1.000000e+00	4.54748e-04	1.513
65	1	1915	1.000000e+00	4.33000e-04	1.223
66	1	1925	1.000000e+00	4.07535e-04	1.125
67	1	1941	1.000000e+00	2.96396e-04	8.497
68	1	1951	1.000000e+00	2.68215e-04	1.283
69	1	1959	1.000000e+00	2.42966e-04	7.266
70	1	1969	1.000000e+00	2.28996e-04	6.611
71	1	1985	1.000000e+00	1.83260e-04	5.290
72	1	2007	1.000000e+00	1.52742e-04	4.333
73	1	2031	1.000000e+00	1.18514e-04	3.547

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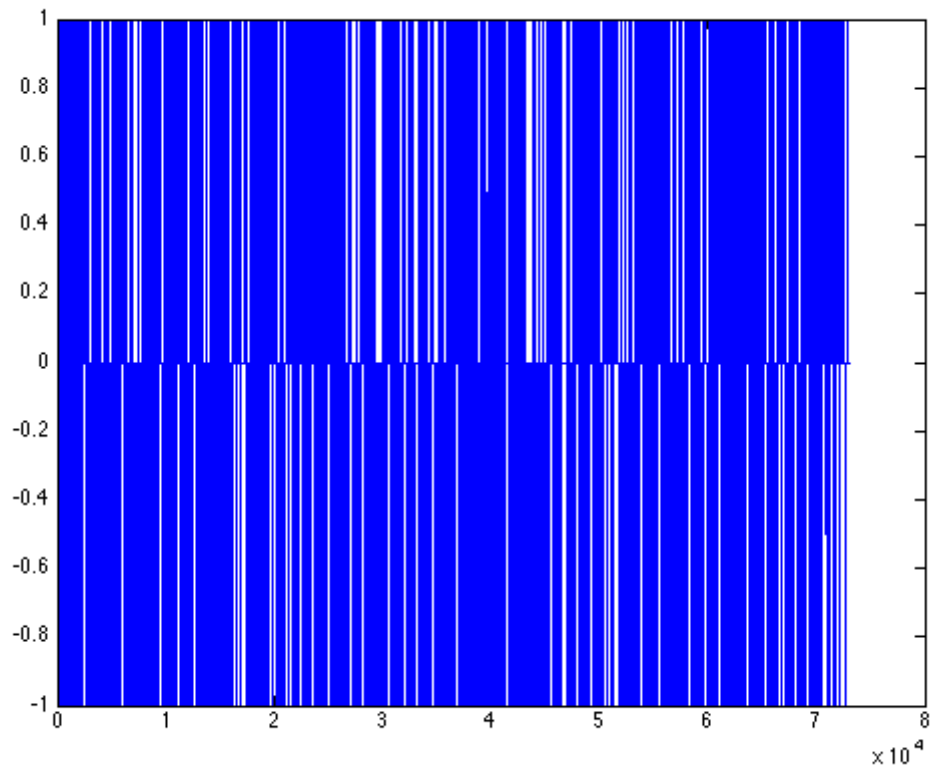
74	1	2040	5.00000e-01	1.13769e-04	4.479
75	1	2058	1.00000e+00	1.00319e-04	2.848
76	1	2072	1.00000e+00	9.02886e-05	3.189
77	1	2080	1.00000e+00	8.66164e-05	2.453
78	1	2090	1.00000e+00	8.13906e-05	2.273
79	1	2102	1.00000e+00	7.56747e-05	2.126
80	1	2114	1.00000e+00	7.04771e-05	1.993
81	1	2124	1.00000e+00	6.63786e-05	1.859
82	1	2134	1.00000e+00	6.23571e-05	1.742
83	1	2153	1.00000e+00	5.56051e-05	1.573
84	1	2163	1.00000e+00	5.23041e-05	1.477
85	1	2173	1.00000e+00	4.91898e-05	1.387
86	1	2183	1.00000e+00	4.62704e-05	1.306
87	1	2193	1.00000e+00	4.35491e-05	1.230
88	1	2203	1.00000e+00	4.10022e-05	1.161
89	1	2213	1.00000e+00	3.86297e-05	1.097
90	1	2223	1.00000e+00	3.64128e-05	1.038
91	1	2233	1.00000e+00	3.43449e-05	9.829
92	1	2243	1.00000e+00	3.24116e-05	9.313
93	1	2253	1.00000e+00	3.06024e-05	8.831
94	1	2263	1.00000e+00	2.89076e-05	8.380
95	1	2273	1.00000e+00	2.73188e-05	7.957
96	1	2283	1.00000e+00	2.58279e-05	7.558
97	1	2293	1.00000e+00	2.44277e-05	7.182
98	1	2303	1.00000e+00	2.31124e-05	6.828
99	1	2313	1.00000e+00	2.18751e-05	6.493
100	1	2323	1.00000e+00	2.07105e-05	6.176
101	1	2333	1.00000e+00	1.96132e-05	5.877
102	1	2343	1.00000e+00	1.85788e-05	5.593
103	1	2353	1.00000e+00	1.76031e-05	5.323
104	1	2363	1.00000e+00	1.66822e-05	5.068
105	1	2368	1.00000e+00	1.58327e-05	4.606
106	1	2378	1.00000e+00	1.49599e-05	4.283
107	1	2388	1.00000e+00	1.41386e-05	4.066
108	1	2398	1.00000e+00	1.33708e-05	3.874
109	1	2408	1.00000e+00	1.26534e-05	3.693
110	1	2418	1.00000e+00	1.19801e-05	3.521
111	1	2428	1.00000e+00	1.13473e-05	3.359
112	1	2438	1.00000e+00	1.07517e-05	3.204
113	1	2448	1.00000e+00	1.01905e-05	3.057
114	1	2458	1.00000e+00	9.66097e-06	2.916
115	1	2468	1.00000e+00	9.16107e-06	2.782
116	1	2473	1.00000e+00	8.69336e-06	2.543
117	1	2483	1.00000e+00	8.22307e-06	2.373
118	1	2493	1.00000e+00	7.78058e-06	2.258
119	1	2503	1.00000e+00	7.36541e-06	2.153
120	1	2513	1.00000e+00	6.97570e-06	2.055
121	1	2523	1.00000e+00	6.60925e-06	1.962
122	1	2533	1.00000e+00	6.26424e-06	1.873
123	1	2543	1.00000e+00	5.93907e-06	1.788
124	1	2553	1.00000e+00	5.63231e-06	1.707
125	1	2558	1.00000e+00	5.34483e-06	1.565
126	1	2568	1.00000e+00	5.05696e-06	1.464
127	1	2578	1.00000e+00	4.78624e-06	1.394

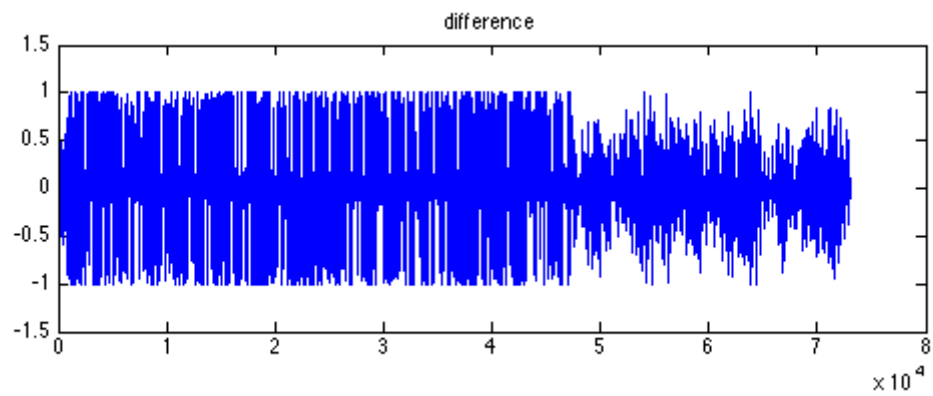
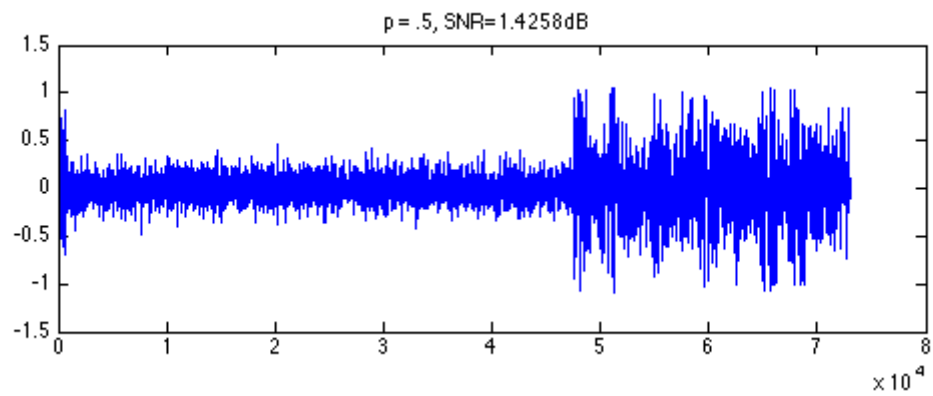
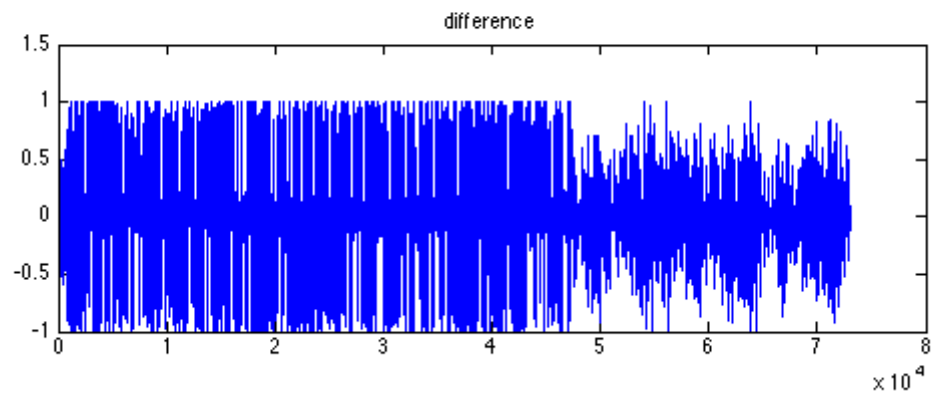
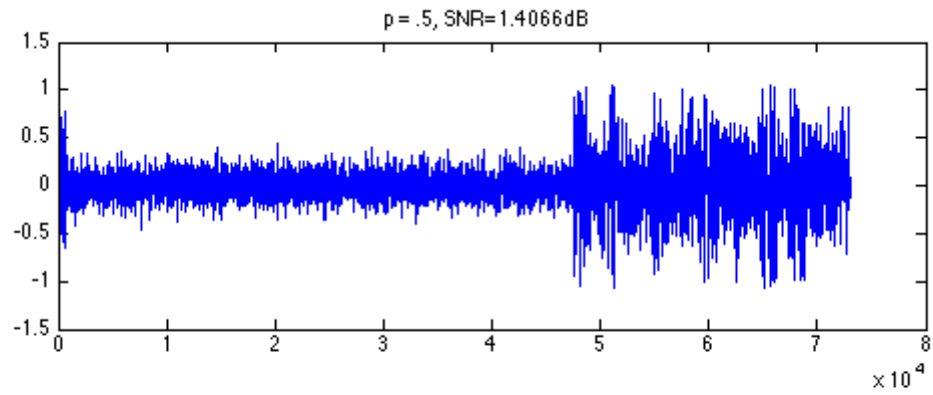
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128	1	2588	1.00000e+00	4.53210e-06	1.330
129	1	2598	1.00000e+00	4.29337e-06	1.269
Directional Derivative below optTol					
130	1	3071	1.00000e+00	4.24758e-06	1.242
Function value changing by less than optTol					
130	4.2475751e-06	4.2203144e-05	5.82e-08	0.0	23556
EXIT -- Optimal solution found					
Products with A	:	134	Total time (secs)	:	489.3
Products with A'	:	134	Project time (secs)	:	106.4
Newton iterations	:	0	Mat-vec time (secs)	:	14.7





---

## if given known compressible vector

```
nn = linspace(0,1,n);
x0_compress = exp(-nn.^1);
x0_compress = x0_compress - min(x0_compress);
figure;plot(x0_compress)
x0_compress = x0_compress(:);
b_compress = A*x0_compress + 0.005 * randn(m,1);

tau = norm(x0_compress,1);

options = spgSetParms('optTol', 1e-4, 'iterations', 200);%, 'fid', fid);
xinit = zeros(size(A,2),1);

xestspg = spg11(A,b_compress,tau,[],xinit,options);
xestpqn = pqn11_2(A,b_compress,tau,[],xinit,options);
snrspg = SNR(x0_compress,xestspg);
snrpqn = SNR(x0_compress,xestpqn);

figure('Name','compressible vector SPG');
subplot(2,1,1);plot(xestspg);
title(strcat(['p = .5, SNR=' num2str(snrspg) 'dB']))
subplot(2,1,2);plot(xestspg - x0_compress);
title('difference')

figure('Name','compressible vector PQN');
subplot(2,1,1);plot(xestpqn);
title(strcat(['p = .5, SNR=' num2str(snrpqn) 'dB']))
subplot(2,1,2);plot(xestpqn - x0_compress);
title('difference')
```

=====

SPGL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

=====

No. rows	:	12800	No. columns	:	73051
Initial tau	:	2.66e+03	Two-norm of b	:	9.61e+00
Optimality tol	:	1.00e-04	Target one-norm of x	:	2.66e+03
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	9.6051373e+00	5.1774333e+01	8.97e-01	0.0	0	0
1	3.2430688e+00	1.3338999e+02	2.63e-01	-0.3	59864	0
2	1.6573851e+00	3.3914359e+02	1.78e-01	0.0	59642	0
3	1.0057797e+00	2.3510946e+02	8.89e-02	0.0	60378	0
4	6.3599274e-01	1.7855283e+02	6.79e-02	0.0	60255	0
5	5.0369449e-01	2.6466581e+02	9.91e-02	0.0	60507	0
6	3.7678593e-01	2.1133551e+02	7.97e-02	0.0	60460	0
7	2.7398595e-01	4.7409366e+01	1.79e-02	0.0	60525	0
8	2.5249596e-01	2.7669196e+01	1.05e-02	0.0	60527	0
9	2.2653300e-01	1.4020046e+01	5.32e-03	0.0	60542	0
10	2.1951166e-01	5.6901369e+01	2.14e-02	0.0	60645	0

11	2.1844581e-01	5.1648898e+01	1.94e-02	-0.3	60656	0
12	2.1357705e-01	5.5976750e-01	2.12e-04	0.0	60644	0
13	2.1357132e-01	4.6292746e-01	1.76e-04	0.0	60643	0
14	2.1355832e-01	1.1740184e-02	4.47e-06	0.0	60640	0
15	2.1355832e-01	5.4282982e-03	2.01e-06	0.0	60640	0
16	2.1355832e-01	1.1423831e-02	4.26e-06	0.0	60640	0
17	2.1355831e-01	6.0091882e-03	2.28e-06	0.0	60640	0
18	2.1355831e-01	6.4694412e-04	2.44e-07	0.0	60640	0
19	2.1355831e-01	1.8519437e-04	7.08e-08	0.0	60640	0
20	2.1355831e-01	9.7160755e-05	3.71e-08	0.0	60640	0

EXIT -- Optimal solution found

Products with A	:	24	Total time (secs)	:	2.4
Products with A'	:	21	Project time (secs)	:	0.0
Newton iterations	:	0	Mat-vec time (secs)	:	2.1
Line search its	:	3	Subspace iterations	:	0

=====

PQNL1\_SLIM v. 46 (Tue, 14 Jun 2011) based on v.1017

=====

No. rows	:	12800	No. columns	:	73051
Initial tau	:	2.66e+03	Two-norm of b	:	9.61e+00
Optimality tol	:	1.00e-04	Target one-norm of x	:	2.66e+03
Basis pursuit tol	:	1.00e-06	Maximum iterations	:	200

Iter	Objective	Relative Gap	gNorm	stepG	nnzX	nnzG
0	9.6051373e+00	5.1774333e+01	8.97e-01	0.0	0	0

Inside of minConf\_PQN

Iteration	FunEvals	Projections	Step Length	rNorm2	O
1	1	4	5.00000e-01	8.60231e+00	2.203
2	1	21	1.00000e+00	1.55403e+00	2.914
3	1	34	1.00000e+00	1.04845e+00	1.681
4	1	51	1.00000e+00	4.20548e-01	7.981
5	1	74	5.00000e-01	2.97029e-01	4.896
6	1	93	1.00000e+00	2.39095e-01	2.466
7	1	116	1.00000e+00	2.13700e-01	1.928
8	1	128	1.00000e+00	2.13563e-01	2.986
9	1	134	1.00000e+00	2.13559e-01	1.101

Directional Derivative below optTol

10	2	155	1.00000e+00	2.13559e-01	1.101
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Step size below optTol

10	2.1355923e-01	1.4014310e-01	5.28e-05	0.0	60641	0
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Inside of minConf\_PQN

Iteration	FunEvals	Projections	Step Length	rNorm2	O
11	1	4	5.00000e-01	2.13559e-01	7.581

Directional Derivative below optTol

12	2	9	1.00000e+00	2.13559e-01	7.581
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Step size below optTol

12	2.1355866e-01	2.5524533e-01	9.62e-05	0.0	60642	0
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Inside of minConf\_PQN

Iteration	FunEvals	Projections	Step Length	rNorm2	O
13	1	4	2.50000e-01	2.13558e-01	4.387

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Directional Derivative below optTol							
14	2	9	1.00000e+00	2.13558e-01	4.387		
Step size below optTol							
14	2.1355846e-01	1.2987085e-01	4.89e-05	0.0	60643	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
15	1	4	2.50000e-01	2.13558e-01	2.896		
Directional Derivative below optTol							
16	2	9	1.00000e+00	2.13558e-01	2.896		
Step size below optTol							
16	2.1355839e-01	6.3701421e-02	2.41e-05	0.0	60642	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
17	1	4	5.00000e-01	2.13558e-01	2.467		
Directional Derivative below optTol							
18	2	9	1.00000e+00	2.13558e-01	2.467		
Step size below optTol							
18	2.1355836e-01	1.2882908e-01	4.84e-05	0.0	60642	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
19	1	4	2.50000e-01	2.13558e-01	1.484		
Directional Derivative below optTol							
20	2	9	1.00000e+00	2.13558e-01	1.484		
Step size below optTol							
20	2.1355833e-01	6.4167811e-02	2.42e-05	0.0	60642	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
21	1	4	2.50000e-01	2.13558e-01	9.592		
Directional Derivative below optTol							
22	2	9	1.00000e+00	2.13558e-01	9.592		
Step size below optTol							
22	2.1355832e-01	3.2277059e-02	1.22e-05	0.0	60641	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
23	1	4	2.50000e-01	2.13558e-01	6.347		
Directional Derivative below optTol							
24	2	9	1.00000e+00	2.13558e-01	6.347		
Step size below optTol							
24	2.1355832e-01	1.5973307e-02	6.03e-06	0.0	60641	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
25	1	4	5.00000e-01	2.13558e-01	5.710		
Directional Derivative below optTol							
26	2	9	1.00000e+00	2.13558e-01	5.710		
Step size below optTol							
26	2.1355832e-01	3.2230237e-02	1.21e-05	0.0	60641	0	
Inside of minConf_PQN							
Iteration	FunEvals	Projections	Step Length		rNorm2		0
27	1	4	2.50000e-01	2.13558e-01	3.392		
Directional Derivative below optTol							
28	2	9	1.00000e+00	2.13558e-01	3.392		
Step size below optTol							
28	2.1355831e-01	1.6059046e-02	6.04e-06	0.0	60641	0	
Inside of minConf_PQN							

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Iteration	FunEvals	Projections	Step Length	rNorm2	0
29	1	4	2.50000e-01	2.13558e-01	2.149
Directional Derivative below optTol					
30	2	9	1.00000e+00	2.13558e-01	2.149
Step size below optTol					
30	2.1355831e-01	8.0541816e-03	3.03e-06	0.0	60641
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
31	1	4	2.50000e-01	2.13558e-01	1.398
Directional Derivative below optTol					
32	2	9	1.00000e+00	2.13558e-01	1.398
Step size below optTol					
32	2.1355831e-01	3.9990855e-03	1.51e-06	0.0	60641
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
33	1	4	5.00000e-01	2.13558e-01	1.340
Directional Derivative below optTol					
34	2	9	1.00000e+00	2.13558e-01	1.340
Step size below optTol					
34	2.1355831e-01	8.0586476e-03	3.03e-06	0.0	60641
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
35	1	4	2.50000e-01	2.13558e-01	7.821
Directional Derivative below optTol					
36	2	9	1.00000e+00	2.13558e-01	7.821
Step size below optTol					
36	2.1355831e-01	4.0169279e-03	1.51e-06	0.0	60640
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
37	1	4	2.50000e-01	2.13558e-01	4.855
Directional Derivative below optTol					
38	2	7	1.00000e+00	2.13558e-01	4.855
Step size below optTol					
38	2.1355831e-01	2.0138556e-03	7.57e-07	0.0	60640
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
39	1	4	2.50000e-01	2.13558e-01	3.101
Directional Derivative below optTol					
40	2	7	1.00000e+00	2.13558e-01	3.101
Step size below optTol					
40	2.1355831e-01	1.0008962e-03	3.77e-07	0.0	60640
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
41	1	4	2.50000e-01	2.13558e-01	2.105
Function value changing by less than optTol					
41	2.1355831e-01	5.1705016e-04	1.95e-07	0.0	60640
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
42	1	4	5.00000e-01	2.13558e-01	1.818
Function value changing by less than optTol					
42	2.1355831e-01	1.0046537e-03	3.78e-07	0.0	60640
Inside of minConf_PQN					
Iteration	FunEvals	Projections	Step Length	rNorm2	0
43	1	4	2.50000e-01	2.13558e-01	1.105

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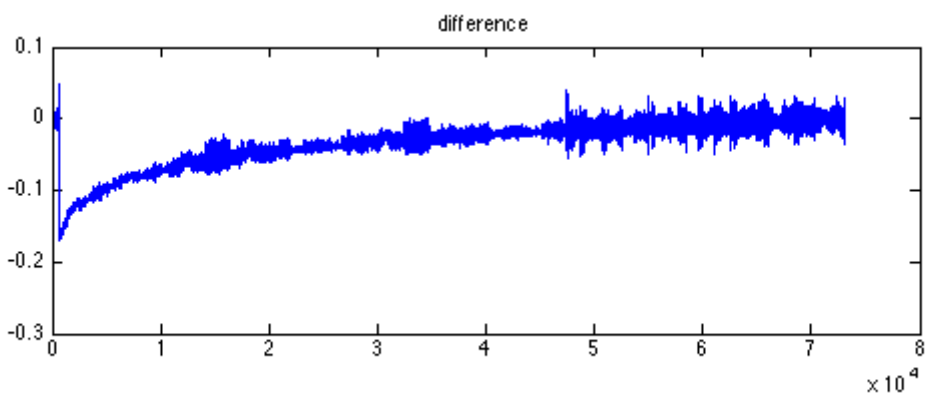
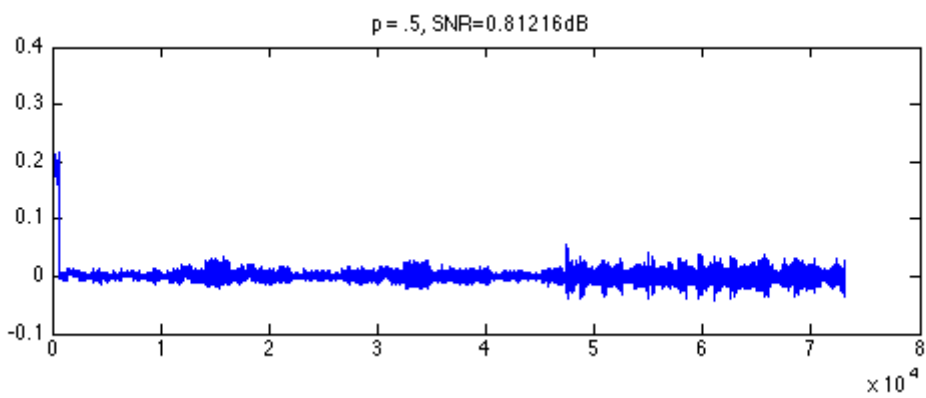
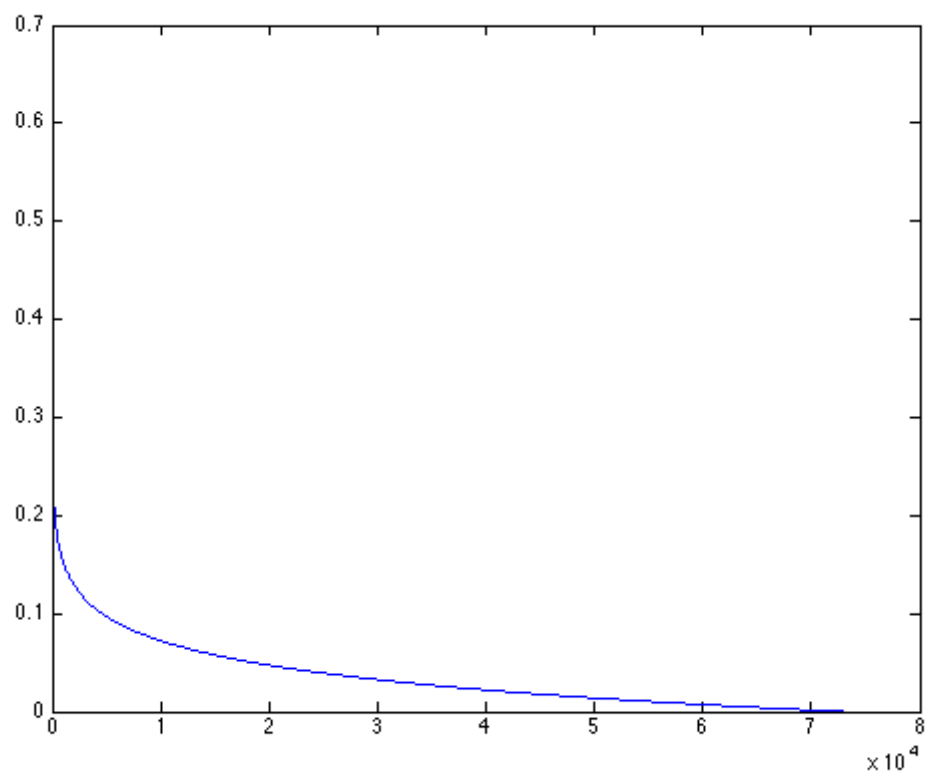
```

Function value changing by less than optTol
  43  2.1355831e-01  5.0352218e-04  1.89e-07  0.0  60640  0
Inside of minConf_PQN
  Iteration  FunEvals Projections  Step Length  rNorm2  0
    44         1         4  2.50000e-01  2.13558e-01  6.932
Function value changing by less than optTol
  44  2.1355831e-01  2.5045912e-04  9.43e-08  0.0  60640  0
Inside of minConf_PQN
  Iteration  FunEvals Projections  Step Length  rNorm2  0
Directional Derivative below optTol
    45         1         4  2.50000e-01  2.13558e-01  4.627
Function value changing by less than optTol
  45  2.1355831e-01  1.2794327e-04  4.82e-08  0.0  60640  0
Inside of minConf_PQN
  Iteration  FunEvals Projections  Step Length  rNorm2  0
Directional Derivative below optTol
    46         1         4  5.00000e-01  2.13558e-01  4.260
Function value changing by less than optTol
  46  2.1355831e-01  2.5125159e-04  9.45e-08  0.0  60640  0
Inside of minConf_PQN
  Iteration  FunEvals Projections  Step Length  rNorm2  0
Directional Derivative below optTol
    47         1         4  2.50000e-01  2.13558e-01  2.540
Function value changing by less than optTol
  47  2.1355831e-01  1.2589269e-04  4.73e-08  0.0  60640  0
Inside of minConf_PQN
  Iteration  FunEvals Projections  Step Length  rNorm2  0
Directional Derivative below optTol
    48         1         4  2.50000e-01  2.13558e-01  1.561
Function value changing by less than optTol
  48  2.1355831e-01  6.2664316e-05  2.36e-08  0.0  60640  0
EXIT -- Optimal solution found

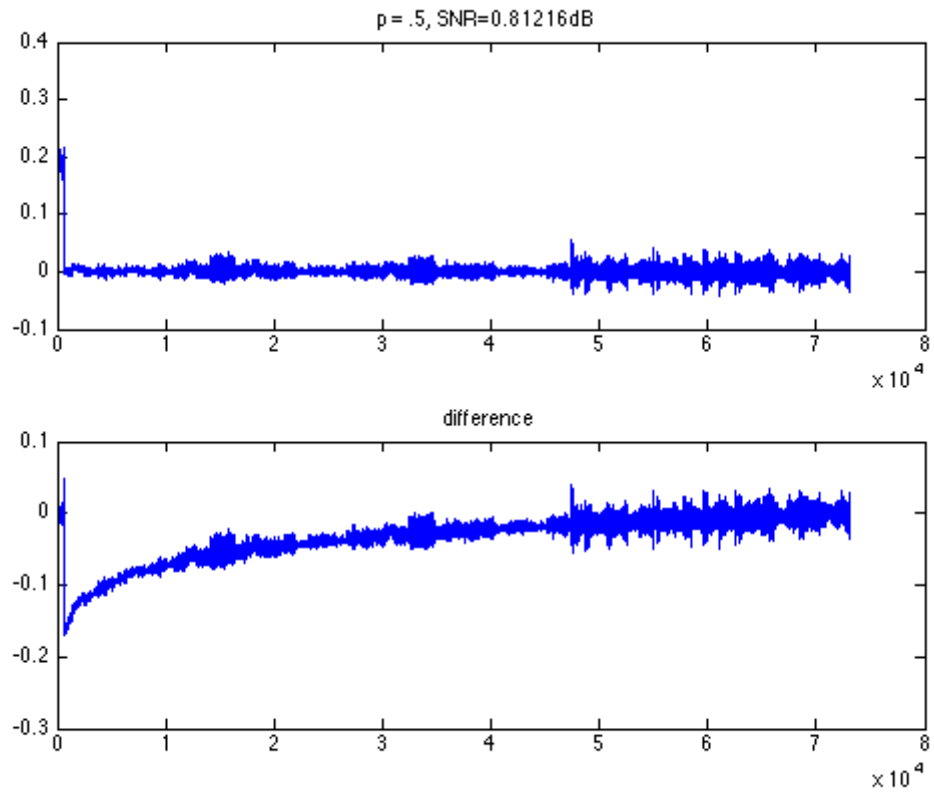
Products with A      :      131      Total time (secs) :      17.9
Products with A'     :      131      Project time (secs) :       2.4
Newton iterations    :         0      Mat-vec time (secs) :      13.5

```

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