clc

clear;

Y\_Bus=[6.03-19.45i -5+15.26i 0 0 -1.03+4.23i 0 0 0 0 0 0 0 0 0;

-5+15.26i 9.52-30.27i -1.14+4.78i -1.69+5.12i -1.7+5.19i 0 0 0 0 0 0 0 0 0;

0 -1.14+4.78i 3.12-9.82i -1.99+5.07i 0 0 0 0 0 0 0 0 0 0;

0 -1.69+5.12i -1.99+5.07i 10.5157-38.6542i -6.8410+21.5786i 0 -0.0023+4.8895i 0 -0.0003+1.8555i 0 0 0 0 0;

-1.03+4.23i -1.7+5.19i 0 -6.84+21.58i 9.5698-35.5336i -0.0017+4.2574i 0 0 0 0 0 0 0 0;

0 0 0 0 -0.0017+4.2574i 6.5815-17.3407i 0 0 0 0 -1.96+4.09i -1.53+3.18i -3.1+6.10i 0;

0 0 0 -0.0023+4.8895i 0 0 0.0138-19.5490i -0.0032+5.6770i -0.0083+9.0901i 0 0 0 0 0;

0 0 0 0 0 0 -0.0032+5.6770i 0.0032+-5.6770i 0 0 0 0 0 0;

0 0 0 -0.0003+1.8555i 0 0 -0.0083+9.0901i 0 5.3346-24.0925i -3.9+10.37i 0 0 0 -1.42+3.03i;

0 0 0 0 0 0 0 0 -3.9+10.37i 5.78-14.77i -1.88+4.4i 0 0 0;

0 0 0 0 0 -1.96+4.09i 0 0 0 -1.88+4.4i 3.84-8.5i 0 0 0;

0 0 0 0 0 -1.53+3.18i 0 0 0 0 0 4.01-5.43i -2.49+2.25i 0;

0 0 0 0 0 -3.1+6.10i 0 0 0 0 0 -2.49+2.25i 6.72-10.67i -1.14+2.31i;

0 0 0 0 0 0 0 0 -1.42+3.03i 0 0 0 -1.14+2.31i 2.56-5.34i];

Yline\_G=xlsread('14bus\_G.xlsx', 'B2:O15');

Yline\_B=xlsread('14bus\_B.xlsx', 'B2:O15');

Yshunt\_B=xlsread('14bus\_shuntB.xlsx', 'B2:O15');

Yconn=xlsread('14bus\_Connectivity.xlsx', 'B2:O15');

%disp(Yline\_G);

%disp(Yline\_B);

%disp(Yshunt\_B);

%disp(Yconn);

B=eye(14);

for j=1:14

Y(:,:,j)=B(:,j)\*B(j,:)\*Y\_Bus;

%disp(Y(:,:,j));

Y\_n\_a(:,:,j)=0.5\*[real(Y(:,:,j)+transpose(Y(:,:,j))) imag(transpose(Y(:,:,j))-Y(:,:,j));

imag(Y(:,:,j)-transpose(Y(:,:,j))) real(Y(:,:,j)+transpose(Y(:,:,j)))];

Y\_n\_r(:,:,j)=-0.5\*[imag(Y(:,:,j)+transpose(Y(:,:,j))) real(Y(:,:,j)-transpose(Y(:,:,j)));

real(transpose(Y(:,:,j))-Y(:,:,j)) imag(Y(:,:,j)+transpose(Y(:,:,j)))];

%disp(Y\_net\_act(:,:,j));

%disp(Y\_net\_react(:,:,j));

M(:,:,j)=[B(:,j)\*B(j,:) zeros(14,14);zeros(14,14) B(:,j)\*B(j,:)];

end

c=0;

for l=1:14

for m=1:14

if Yconn(l,m)==1

c=c+1;

Y\_line\_r(:,:,c)=Yline\_G(l,m)\*B(:,l)\*B(l,:)-Yline\_G(l,m)\*B(:,l)\*B(m,:);

Y\_line\_i(:,:,c)=(Yline\_B(l,m)+Yshunt\_B(l,m))\*B(:,l)\*B(l,:)-Yline\_B(l,m)\*B(:,l)\*B(m,:);

Y\_line\_net(:,:,c)=0.5\*[Y\_line\_r(:,:,c)+transpose(Y\_line\_r(:,:,c)) transpose(Y\_line\_i(:,:,c))-Y\_line\_i(:,:,c);Y\_line\_i(:,:,c)-transpose(Y\_line\_i(:,:,c)) Y\_line\_r(:,:,c)+transpose(Y\_line\_r(:,:,c))];

disp([l m c]);

%disp(m);

%disp(c);

end

end

end

%disp(c);

Y\_act=[Y\_n\_a(:,:,1) Y\_n\_a(:,:,2) Y\_n\_a(:,:,3) Y\_n\_a(:,:,4) Y\_n\_a(:,:,5) Y\_n\_a(:,:,6) Y\_n\_a(:,:,7) Y\_n\_a(:,:,8) Y\_n\_a(:,:,9) Y\_n\_a(:,:,10) Y\_n\_a(:,:,11) Y\_n\_a(:,:,12) Y\_n\_a(:,:,13) Y\_n\_a(:,:,14)];

Y\_react=[Y\_n\_r(:,:,1) Y\_n\_r(:,:,2) Y\_n\_r(:,:,3) Y\_n\_r(:,:,4) Y\_n\_r(:,:,5) Y\_n\_r(:,:,6) Y\_n\_r(:,:,7) Y\_n\_r(:,:,8) Y\_n\_r(:,:,9) Y\_n\_r(:,:,10) Y\_n\_r(:,:,11) Y\_n\_r(:,:,12) Y\_n\_r(:,:,13) Y\_n\_r(:,:,14)];

M\_net=[M(:,:,1) M(:,:,2) M(:,:,3) M(:,:,4) M(:,:,5) M(:,:,6) M(:,:,7) M(:,:,8) M(:,:,9) M(:,:,10) M(:,:,11) M(:,:,12) M(:,:,13) M(:,:,14)];

P\_k\_Max=[3.324;1.4;0;0;0;0;0;0;0;0;0;0;0;0];

P\_k\_Min=[0;0;0;0;0;0;0;0;0;0;0;0;0;0];

Q\_k\_Max=[.10;.5;.4;0;0;.24;0;.24;0;0;0;0;0;0];

Q\_k\_Min=[-.2;-.4;0;0;0;-.06;0;-.06;0;0;0;0;0;0];

V\_k\_Max=[1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06;1.06];

V\_k\_Min=[0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94;0.94];

V\_k\_M=V\_k\_Max.\*V\_k\_Max;

V\_k\_m=V\_k\_Min.\*V\_k\_Min;

P\_d\_k=[0;.217;.942;.478;.076;.112;0;0;.295;.09;.035;.061;.135;.149];

Q\_d\_k=[0;.127;.190;-.039;.016;.075;0;0;-.024;.058;.018;.016;.058;.05];

c12=0.0430293;c11=20;c10=0;c22=.25;c21=20;c20=0;

cvx\_begin sdp

variables lambdak\_m(14) lambdak\_M(14) lambda\_k\_m(14) lambda\_k\_M(14) mu\_k\_M(14) mu\_k\_m(14) lambda\_lm(c);

variables r\_1\_1 r\_1\_2 r\_2\_1 r\_2\_2;

dual variable A;

expression S(28,28,15);

S(:,:,1)=zeros(28,28);

for count=1:14

S(:,:,count+1)=S(:,:,count)+(lambdak\_M(count)-lambdak\_m(count))\*Y\_n\_a(:,:,count)+(lambda\_k\_M(count)-lambda\_k\_m(count))\*Y\_n\_r(:,:,count)+(mu\_k\_M(count)-mu\_k\_m(count))\*M(:,:,count);

end

expression s(28,28,c+1);

s(:,:,1)=zeros(28,28);

for lcount=1:c

s(:,:,lcount+1)=s(:,:,lcount)+(lambda\_lm(lcount))\*Y\_line\_net(:,:,lcount);

end

maximize transpose(lambdak\_m)\*P\_k\_Min-transpose(lambdak\_M)\*P\_k\_Max+transpose(lambdak\_M-lambdak\_m)\*P\_d\_k+transpose(lambda\_k\_m)\*Q\_k\_Min-transpose(lambda\_k\_M)\*Q\_k\_Max+transpose(lambda\_k\_M-lambda\_k\_m)\*Q\_d\_k+transpose(mu\_k\_m)\*(V\_k\_m.\*V\_k\_m)-transpose(mu\_k\_M)\*(V\_k\_M.\*V\_k\_M)+c10+c20-r\_1\_2-r\_2\_2+(c11+2\*sqrt(c12)\*r\_1\_1)\*P\_d\_k(1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*P\_d\_k(2)-0.728\*(transpose(lambda\_lm)\*ones(c,1));

subject to

lambda\_lm>=0;

lambdak\_m>=0;

lambdak\_M>=0;

lambda\_k\_m>=0;

lambda\_k\_M>=0;

mu\_k\_M>=0;

mu\_k\_m>=0;

[1 r\_1\_1;r\_1\_1 r\_1\_2]>=0;

[1 r\_2\_1;r\_2\_1 r\_2\_2]>=0;

S(:,:,15)+s(:,:,c+1)+(c11+2\*sqrt(c12)\*r\_1\_1)\*Y\_n\_a(:,:,1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*Y\_n\_a(:,:,2)>=0:A;

cvx\_end

disp(lambda\_lm);

disp(lambdak\_m);

disp(lambdak\_M);

disp(lambda\_k\_m);

disp(lambda\_k\_M);

disp(mu\_k\_M);

disp(mu\_k\_m);

disp(cvx\_slvitr);

disp(cvx\_slvtol);

%disp([1 r\_1\_1;r\_1\_1 r\_1\_2]);

%disp([1 r\_2\_1;r\_2\_1 r\_2\_2]);

%disp(S(:,:,15)+s(:,:,c+1)+(c11+2\*sqrt(c12)\*r\_1\_1)\*Y\_n\_a(:,:,1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*Y\_n\_a(:,:,2));

[V,D]=eig(S(:,:,15)+s(:,:,c+1)+(c11+2\*sqrt(c12)\*r\_1\_1)\*Y\_n\_a(:,:,1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*Y\_n\_a(:,:,2));

disp([V,D]);

disp(eig(S(:,:,15)+s(:,:,c+1)+(c11+2\*sqrt(c12)\*r\_1\_1)\*Y\_n\_a(:,:,1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*Y\_n\_a(:,:,2)));

disp(min(eig(S(:,:,15)+s(:,:,c+1)+(c11+2\*sqrt(c12)\*r\_1\_1)\*Y\_n\_a(:,:,1)+(c21+2\*sqrt(c22)\*r\_2\_1)\*Y\_n\_a(:,:,2))));

disp(rank(A));

X=[-1.0599;-1.0599;-0.7066;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;-1.0599;0;0;0;0;0;0;0;0;0;0;0;0;0;0];

W=X\*X';

disp(A-W);

for i=1:14

P(i)=trace(Y\_n\_a(:,:,i)\*W);

Q(i)=trace(Y\_n\_r(:,:,i)\*W);

end

for lcount=1:c

P\_flow(lcount)=trace(Y\_line\_net(:,:,lcount)\*W);

disp(P\_flow(lcount));

end

P\_Sol=c12\*((P(1)+P\_d\_k(1))^2)+c11\*(P(1)+P\_d\_k(1))+c22\*((P(2)+P\_d\_k(2))^2)+c21\*(P(2)+P\_d\_k(2));

disp(P\_Sol);

1 2 1

1 5 2

2 1 3

2 3 4

2 4 5

2 5 6

3 2 7

3 4 8

4 2 9

4 3 10

4 5 11

4 7 12

4 9 13

5 1 14

5 2 15

5 4 16

5 6 17

6 5 18

6 11 19

6 12 20

6 13 21

7 4 22

7 8 23

7 9 24

8 7 25

9 4 26

9 7 27

9 10 28

9 14 29

10 9 30

10 11 31

11 6 32

11 10 33

12 6 34

12 13 35

13 6 36

13 12 37

13 14 38

14 9 39

14 13 40

Calling sedumi: 536 variables, 128 equality constraints

For improved efficiency, sedumi is solving the dual problem.

------------------------------------------------------------

SeDuMi 1.21 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.

Alg = 2: xz-corrector, Adaptive Step-Differentiation, theta = 0.250, beta = 0.500

eqs m = 128, order n = 157, dim = 917, blocks = 4

nnz(A) = 1204 + 0, nnz(ADA) = 15882, nnz(L) = 8005

it : b\*y gap delta rate t/tP\* t/tD\* feas cg cg prec

0 : 1.02E+002 0.000

1 : 4.13E+002 5.24E+001 0.000 0.5147 0.9000 0.9000 6.08 1 1 2.6E+001

2 : 3.51E+001 1.89E+001 0.000 0.3613 0.9000 0.9000 1.90 1 1 6.7E+000

3 : 1.12E+001 7.00E+000 0.000 0.3699 0.9000 0.9000 1.41 1 1 2.3E+000

4 : 7.28E+000 3.22E+000 0.000 0.4600 0.9000 0.9000 0.89 1 1 1.3E+000

5 : 1.51E+001 2.01E+000 0.000 0.6242 0.9000 0.9000 0.47 1 1 9.7E-001

6 : 3.38E+001 7.58E-001 0.000 0.3773 0.9000 0.9000 0.72 1 1 3.9E-001

7 : 4.39E+001 2.33E-001 0.000 0.3076 0.9000 0.9000 0.90 1 1 1.2E-001

8 : 4.62E+001 1.03E-001 0.000 0.4407 0.9000 0.9000 0.97 1 1 5.5E-002

9 : 4.77E+001 8.55E-004 0.000 0.0083 0.9000 0.9289 0.86 1 1 2.7E-002

10 : 4.79E+001 1.01E-004 0.000 0.1181 0.0000 0.9000 0.58 1 1 2.7E-002

11 : 4.81E+001 3.99E-005 0.000 0.3954 0.9000 0.5693 0.36 1 1 1.3E-002

12 : 4.84E+001 1.60E-005 0.000 0.3999 0.7735 0.9000 -0.05 1 1 1.0E-002

13 : 4.95E+001 7.76E-006 0.000 0.4856 0.9000 0.9000 -0.08 1 1 5.1E-003

14 : 5.06E+001 1.62E-006 0.000 0.2089 0.9000 0.9000 0.65 1 1 1.2E-003

15 : 5.08E+001 1.42E-007 0.387 0.0877 0.9900 0.9900 0.94 1 1 1.0E-004

16 : 5.09E+001 3.06E-008 0.000 0.2150 0.9000 0.9000 0.99 1 2 2.2E-005

17 : 5.09E+001 5.79E-009 0.000 0.1894 0.9000 0.9000 1.00 1 8 4.3E-006

18 : 5.09E+001 1.79E-009 0.000 0.3092 0.9000 0.9000 1.00 1 8 1.3E-006

19 : 5.09E+001 4.15E-010 0.000 0.2317 0.9000 0.9000 1.00 1 8 3.0E-007

20 : 5.09E+001 3.72E-011 0.146 0.0897 0.9900 0.9900 1.00 2 10 2.7E-008

21 : 5.09E+001 7.72E-012 0.000 0.2076 0.9000 0.9000 1.00 2 12 5.5E-009

iter seconds digits c\*x b\*y

21 1.3 Inf 5.0873260121e+001 5.0873260144e+001

|Ax-b| = 3.5e-008, [Ay-c]\_+ = 5.9E-010, |x|= 1.3e+001, |y|= 1.5e+003

Detailed timing (sec)

Pre IPM Post

5.469E-001 1.328E+000 2.656E-001

Max-norms: ||b||=3.324000e+000, ||c|| = 200,

Cholesky |add|=0, |skip| = 20, ||L.L|| = 15.7247.

------------------------------------------------------------

Status: Solved

Optimal value (cvx\_optval): +55.2133

17.0425

0.0000

0.0000

513.0697

0.0000

0.0000

0.0000

0.0000

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0.0000

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0.0000

118.5590

150.9711

159.3652

156.0723

150.4491

146.7495

152.0150

152.8463

153.9103

154.9589

154.7524

151.9620

0.0000

0.0000

446.6766

266.4178

247.2475

253.1120

261.7068

258.0060

261.0787

260.3684

256.5905

254.3183

255.3615

259.4346

0.0000

0.0000

17.9041

188.4734

188.0601

0.0000

190.1567

0.0000

190.2199

189.8111

189.1710

188.3163

188.4973

189.0219

1.4398

0.0000

0.0000

194.2931

194.7520

4.9342

192.5365

0.0000

192.5290

192.8824

193.3574

194.1076

194.1595

193.4761

0.0000

0.0000

0.0000

0.0000

0.0000

10.8631

0.0000

6.6273

0.0000

0.0000

0.0000

0.0000

0.0000

0.0000

1.0e-007 \*

0.5129

0.5531

0.8782

0.6788

0.6599

0.4186

0.4664

0.4198

0.4451

0.4579

0.4481

0.4481

0.4614

0.4970

21

8.0837e-009

1.0e+003 \*

Columns 1 through 9

0.0000 0.0003 -0.0004 -0.0003 0.0000 -0.0000 0.0001 0.0003 -0.0001

0.0000 0.0003 -0.0005 0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000

-0.0000 0.0002 -0.0003 0.0004 -0.0001 0.0001 0.0002 -0.0003 0.0001

-0.0000 0.0003 0.0000 0.0001 0.0000 0.0001 0.0005 -0.0001 0.0000

-0.0000 0.0003 0.0000 -0.0001 0.0000 0.0000 0.0004 0.0001 -0.0000

-0.0000 0.0003 0.0001 -0.0000 0.0000 0.0001 -0.0002 -0.0000 -0.0001

-0.0000 0.0003 0.0001 0.0001 0.0000 -0.0001 0.0002 0.0002 0.0005

-0.0000 0.0003 0.0001 0.0001 0.0000 -0.0009 -0.0001 -0.0001 -0.0001

-0.0000 0.0003 0.0001 -0.0000 -0.0000 0.0001 -0.0002 0.0000 -0.0000

-0.0000 0.0003 0.0001 -0.0000 -0.0000 0.0001 -0.0002 0.0000 -0.0000

-0.0000 0.0003 0.0001 -0.0000 -0.0000 0.0001 -0.0002 -0.0000 -0.0001

-0.0000 0.0003 0.0001 -0.0000 0.0000 0.0001 -0.0002 -0.0000 -0.0001

-0.0000 0.0003 0.0001 -0.0000 0.0000 0.0001 -0.0002 -0.0000 -0.0001

-0.0000 0.0003 0.0001 -0.0000 -0.0000 0.0001 -0.0002 0.0000 -0.0001

-0.0003 0.0000 0.0003 -0.0004 0.0000 0.0000 0.0003 -0.0001 0.0001

-0.0003 0.0000 -0.0000 -0.0005 -0.0000 -0.0000 0.0000 -0.0000 0.0000

-0.0002 -0.0000 -0.0004 -0.0003 -0.0001 -0.0001 -0.0003 -0.0002 0.0001

-0.0003 -0.0000 -0.0001 0.0000 -0.0001 0.0000 -0.0001 -0.0005 0.0002

-0.0003 -0.0000 0.0001 0.0000 -0.0000 0.0000 0.0001 -0.0004 0.0002

-0.0003 -0.0000 0.0000 0.0001 -0.0001 0.0000 -0.0000 0.0002 0.0000

-0.0003 -0.0000 -0.0001 0.0001 0.0001 0.0000 0.0002 -0.0002 -0.0008

-0.0003 -0.0000 -0.0001 0.0001 0.0009 0.0000 -0.0001 0.0001 0.0001

-0.0003 -0.0000 0.0000 0.0001 -0.0001 -0.0000 0.0000 0.0002 -0.0000

-0.0003 -0.0000 0.0000 0.0001 -0.0001 -0.0000 0.0000 0.0002 -0.0000

-0.0003 -0.0000 0.0000 0.0001 -0.0001 -0.0000 -0.0000 0.0002 0.0000

-0.0003 -0.0000 0.0000 0.0001 -0.0001 0.0000 -0.0000 0.0002 0.0000

-0.0003 -0.0000 0.0000 0.0001 -0.0001 0.0000 -0.0000 0.0002 0.0000

-0.0003 -0.0000 0.0000 0.0001 -0.0001 -0.0000 0.0000 0.0002 -0.0000

Columns 10 through 18

0.0001 -0.0000 -0.0000 -0.0000 0.0000 -0.0003 0.0006 -0.0000 -0.0000

0.0000 -0.0000 0.0000 0.0000 0.0000 0.0004 -0.0003 0.0000 0.0000

0.0001 0.0000 0.0000 0.0000 0.0000 0.0002 0.0002 -0.0000 0.0000

0.0002 -0.0000 0.0000 -0.0000 0.0000 -0.0002 -0.0002 0.0000 -0.0000

0.0002 -0.0000 0.0000 -0.0000 -0.0000 -0.0001 -0.0004 0.0000 -0.0000

0.0000 0.0000 -0.0003 0.0000 -0.0002 -0.0000 -0.0000 -0.0000 0.0002

-0.0008 -0.0000 -0.0001 -0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000

0.0001 0.0000 0.0000 0.0000 0.0000 -0.0000 -0.0000 -0.0000 -0.0000

-0.0000 0.0000 0.0005 0.0000 0.0000 0.0000 -0.0000 0.0000 -0.0004

-0.0000 -0.0000 0.0005 0.0000 -0.0002 0.0000 0.0000 0.0000 -0.0003

0.0000 -0.0000 0.0001 0.0000 -0.0005 -0.0000 0.0000 -0.0000 0.0006

0.0000 0.0000 -0.0005 -0.0000 0.0000 0.0000 0.0000 0.0000 -0.0004

0.0000 0.0000 -0.0004 -0.0000 0.0001 0.0000 0.0000 0.0000 -0.0000

-0.0000 0.0000 0.0002 -0.0000 0.0008 -0.0000 -0.0000 -0.0000 0.0004

0.0001 -0.0000 0.0000 0.0000 0.0000 0.0006 0.0003 -0.0000 0.0000

-0.0000 0.0000 0.0000 0.0000 -0.0000 -0.0003 -0.0004 0.0000 -0.0000

-0.0001 0.0000 -0.0000 0.0000 -0.0000 0.0002 -0.0002 0.0000 0.0000

-0.0000 0.0000 0.0000 0.0000 0.0000 -0.0002 0.0002 -0.0000 -0.0000

0.0000 0.0000 0.0000 -0.0000 0.0000 -0.0004 0.0001 -0.0000 -0.0000

0.0001 -0.0003 -0.0000 -0.0002 -0.0000 -0.0000 0.0000 0.0002 0.0000

-0.0005 -0.0001 0.0000 -0.0000 0.0000 0.0000 -0.0000 0.0000 -0.0000

0.0001 0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000 -0.0000 0.0000

0.0000 0.0005 -0.0000 0.0000 -0.0000 -0.0000 -0.0000 -0.0004 -0.0000

0.0000 0.0005 0.0000 -0.0002 -0.0000 0.0000 -0.0000 -0.0003 -0.0000

0.0001 0.0001 0.0000 -0.0005 -0.0000 0.0000 0.0000 0.0006 0.0000

0.0001 -0.0005 -0.0000 0.0000 0.0000 0.0000 -0.0000 -0.0004 -0.0000

0.0001 -0.0004 -0.0000 0.0001 0.0000 0.0000 -0.0000 -0.0000 -0.0000

0.0001 0.0002 -0.0000 0.0008 0.0000 -0.0000 0.0000 0.0004 0.0000

Columns 19 through 27

0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000 0.0000 0.0001 0.0000

-0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000 0.0006 -0.0001 -0.0002

0.0000 0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0004 -0.0003 -0.0001

-0.0000 0.0000 -0.0000 0.0000 0.0000 -0.0000 0.0000 -0.0001 0.0007

-0.0000 0.0000 0.0000 -0.0000 -0.0000 0.0000 -0.0002 0.0005 -0.0005

0.0001 -0.0005 0.0005 0.0000 -0.0000 0.0004 -0.0000 -0.0000 0.0000

0.0000 0.0000 -0.0000 -0.0000 0.0000 0.0000 -0.0000 0.0000 -0.0000

-0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0000 0.0000 -0.0000 0.0000

-0.0000 -0.0002 0.0004 0.0001 -0.0000 -0.0005 -0.0000 0.0000 -0.0000

0.0000 -0.0000 -0.0004 -0.0000 0.0000 0.0006 -0.0000 -0.0000 0.0000

-0.0000 0.0003 -0.0000 -0.0000 0.0000 -0.0003 0.0000 0.0000 -0.0000

-0.0000 0.0006 0.0001 0.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000

0.0000 -0.0005 -0.0006 -0.0000 0.0000 -0.0004 0.0000 0.0000 -0.0000

-0.0000 0.0002 0.0000 0.0000 0.0000 0.0002 -0.0000 -0.0000 0.0000

-0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000 0.0001 -0.0000 0.0000

-0.0000 0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0001 -0.0006 -0.0002

0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000 -0.0003 0.0004 0.0004

0.0000 0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0001 -0.0000 -0.0003

0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0005 0.0002 0.0000

-0.0005 -0.0001 -0.0000 0.0005 0.0004 0.0000 -0.0000 0.0000 -0.0000

0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000 0.0000 0.0000 -0.0000

-0.0000 0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000

-0.0002 0.0000 -0.0001 0.0004 -0.0005 0.0000 0.0000 0.0000 -0.0000

-0.0000 -0.0000 0.0000 -0.0004 0.0006 -0.0000 -0.0000 0.0000 0.0000

0.0003 0.0000 0.0000 -0.0000 -0.0003 -0.0000 0.0000 -0.0000 0.0000

0.0006 0.0000 -0.0000 0.0001 0.0000 0.0000 0.0000 -0.0000 0.0000

-0.0005 -0.0000 0.0000 -0.0006 -0.0004 -0.0000 0.0000 -0.0000 0.0000

0.0002 0.0000 -0.0000 0.0000 0.0002 -0.0000 -0.0000 0.0000 -0.0000

Columns 28 through 36

-0.0000 -0.0000 0 0 0 0 0 0 0

0.0002 0 -0.0000 0 0 0 0 0 0

-0.0004 0 0 0.0000 0 0 0 0 0

0.0003 0 0 0 0.0000 0 0 0 0

-0.0000 0 0 0 0 0.0064 0 0 0

0.0000 0 0 0 0 0 0.0064 0 0

0.0000 0 0 0 0 0 0 0.0212 0

-0.0000 0 0 0 0 0 0 0 0.0212

0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

-0.0002 0 0 0 0 0 0 0 0

-0.0001 0 0 0 0 0 0 0 0

0.0007 0 0 0 0 0 0 0 0

-0.0005 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

Columns 37 through 45

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0.0538 0 0 0 0 0 0 0 0

0 0.0538 0 0 0 0 0 0 0

0 0 0.1442 0 0 0 0 0 0

0 0 0 0.1442 0 0 0 0 0

0 0 0 0 0.2706 0 0 0 0

0 0 0 0 0 0.2706 0 0 0

0 0 0 0 0 0 0.4319 0 0

0 0 0 0 0 0 0 0.4319 0

0 0 0 0 0 0 0 0 0.4754

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

Columns 46 through 54

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0.4754 0 0 0 0 0 0 0 0

0 0.7670 0 0 0 0 0 0 0

0 0 0.7670 0 0 0 0 0 0

0 0 0 1.0911 0 0 0 0 0

0 0 0 0 1.0911 0 0 0 0

0 0 0 0 0 1.1809 0 0 0

0 0 0 0 0 0 1.1809 0 0

0 0 0 0 0 0 0 1.4767 0

0 0 0 0 0 0 0 0 1.4767

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

Columns 55 through 56

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

2.4499 0

0 2.4499

1.0e+003 \*

-0.0000

-0.0000

0.0000

0.0000

0.0064

0.0064

0.0212

0.0212

0.0538

0.0538

0.1442

0.1442

0.2706

0.2706

0.4319

0.4319

0.4754

0.4754

0.7670

0.7670

1.0911

1.0911

1.1809

1.1809

1.4767

1.4767

2.4499

2.4499

-5.8790e-010

28

Columns 1 through 9

-0.5348 -0.5436 -0.2140 -0.5670 -0.5619 -0.5296 -0.5396 -0.5290 -0.5378

-0.5436 -0.5490 -0.2142 -0.5707 -0.5672 -0.5330 -0.5427 -0.5321 -0.5408

-0.2140 -0.2142 0.0104 -0.2251 -0.2249 -0.1857 -0.1950 -0.1849 -0.1918

-0.5670 -0.5707 -0.2251 -0.5803 -0.5787 -0.5392 -0.5492 -0.5387 -0.5458

-0.5619 -0.5672 -0.2249 -0.5787 -0.5762 -0.5378 -0.5481 -0.5375 -0.5448

-0.5296 -0.5330 -0.1857 -0.5392 -0.5378 -0.4921 -0.5036 -0.4923 -0.4988

-0.5396 -0.5427 -0.1950 -0.5492 -0.5481 -0.5036 -0.5146 -0.5035 -0.5102

-0.5290 -0.5321 -0.1849 -0.5387 -0.5375 -0.4923 -0.5035 -0.4921 -0.4990

-0.5378 -0.5408 -0.1918 -0.5458 -0.5448 -0.4988 -0.5102 -0.4990 -0.5053

-0.5409 -0.5438 -0.1946 -0.5487 -0.5477 -0.5019 -0.5133 -0.5021 -0.5083

-0.5378 -0.5409 -0.1925 -0.5463 -0.5452 -0.4996 -0.5109 -0.4997 -0.5061

-0.5380 -0.5411 -0.1926 -0.5465 -0.5453 -0.4996 -0.5110 -0.4998 -0.5061

-0.5411 -0.5442 -0.1953 -0.5494 -0.5483 -0.5027 -0.5141 -0.5029 -0.5091

-0.5503 -0.5529 -0.2023 -0.5570 -0.5561 -0.5103 -0.5216 -0.5106 -0.5165

0.0000 0.0210 0.0890 0.0788 0.0674 0.1222 0.1133 0.1154 0.1296

-0.0210 -0.0000 0.0667 0.0542 0.0434 0.0953 0.0867 0.0883 0.1028

-0.0890 -0.0667 -0.0000 -0.0178 -0.0288 0.0147 0.0082 0.0084 0.0227

-0.0788 -0.0542 0.0178 -0.0000 -0.0128 0.0346 0.0283 0.0288 0.0429

-0.0674 -0.0434 0.0288 0.0128 -0.0000 0.0489 0.0422 0.0430 0.0571

-0.1222 -0.0953 -0.0147 -0.0346 -0.0489 -0.0000 -0.0061 -0.0062 0.0094

-0.1133 -0.0867 -0.0082 -0.0283 -0.0422 0.0061 -0.0000 0.0000 0.0152

-0.1154 -0.0883 -0.0084 -0.0288 -0.0430 0.0062 -0.0000 -0.0000 0.0155

-0.1296 -0.1028 -0.0227 -0.0429 -0.0571 -0.0094 -0.0152 -0.0155 -0.0000

-0.1300 -0.1034 -0.0236 -0.0437 -0.0578 -0.0104 -0.0162 -0.0165 -0.0011

-0.1266 -0.1000 -0.0201 -0.0400 -0.0542 -0.0063 -0.0121 -0.0123 0.0031

-0.1276 -0.1010 -0.0210 -0.0410 -0.0551 -0.0073 -0.0131 -0.0134 0.0021

-0.1280 -0.1015 -0.0219 -0.0418 -0.0559 -0.0084 -0.0142 -0.0144 0.0009

-0.1360 -0.1097 -0.0306 -0.0507 -0.0646 -0.0185 -0.0240 -0.0244 -0.0092

Columns 10 through 18

-0.5409 -0.5378 -0.5380 -0.5411 -0.5503 0.0000 -0.0210 -0.0890 -0.0788

-0.5438 -0.5409 -0.5411 -0.5442 -0.5529 0.0210 -0.0000 -0.0667 -0.0542

-0.1946 -0.1925 -0.1926 -0.1953 -0.2023 0.0890 0.0667 -0.0000 0.0178

-0.5487 -0.5463 -0.5465 -0.5494 -0.5570 0.0788 0.0542 -0.0178 -0.0000

-0.5477 -0.5452 -0.5453 -0.5483 -0.5561 0.0674 0.0434 -0.0288 -0.0128

-0.5019 -0.4996 -0.4996 -0.5027 -0.5103 0.1222 0.0953 0.0147 0.0346

-0.5133 -0.5109 -0.5110 -0.5141 -0.5216 0.1133 0.0867 0.0082 0.0283

-0.5021 -0.4997 -0.4998 -0.5029 -0.5106 0.1154 0.0883 0.0084 0.0288

-0.5083 -0.5061 -0.5061 -0.5091 -0.5165 0.1296 0.1028 0.0227 0.0429

-0.5113 -0.5091 -0.5091 -0.5121 -0.5195 0.1300 0.1034 0.0236 0.0437

-0.5091 -0.5068 -0.5069 -0.5099 -0.5173 0.1266 0.1000 0.0201 0.0400

-0.5091 -0.5069 -0.5069 -0.5100 -0.5174 0.1276 0.1010 0.0210 0.0410

-0.5121 -0.5099 -0.5100 -0.5130 -0.5203 0.1280 0.1015 0.0219 0.0418

-0.5195 -0.5173 -0.5174 -0.5203 -0.5274 0.1360 0.1097 0.0306 0.0507

0.1300 0.1266 0.1276 0.1280 0.1360 0.5886 0.5798 0.5349 0.5564

0.1034 0.1000 0.1010 0.1015 0.1097 0.5798 0.5744 0.5347 0.5527

0.0236 0.0201 0.0210 0.0219 0.0306 0.5349 0.5347 0.5097 0.5238

0.0437 0.0400 0.0410 0.0418 0.0507 0.5564 0.5527 0.5238 0.5431

0.0578 0.0542 0.0551 0.0559 0.0646 0.5615 0.5561 0.5240 0.5447

0.0104 0.0063 0.0073 0.0084 0.0185 0.5938 0.5904 0.5632 0.5842

0.0162 0.0121 0.0131 0.0142 0.0240 0.5837 0.5807 0.5539 0.5742

0.0165 0.0123 0.0134 0.0144 0.0244 0.5944 0.5913 0.5641 0.5847

0.0011 -0.0031 -0.0021 -0.0009 0.0092 0.5856 0.5826 0.5571 0.5776

-0.0000 -0.0041 -0.0031 -0.0020 0.0081 0.5825 0.5796 0.5543 0.5747

0.0041 -0.0000 0.0010 0.0021 0.0122 0.5856 0.5824 0.5565 0.5770

0.0031 -0.0010 -0.0000 0.0011 0.0112 0.5854 0.5823 0.5563 0.5769

0.0020 -0.0021 -0.0011 -0.0000 0.0100 0.5823 0.5792 0.5536 0.5740

-0.0081 -0.0122 -0.0112 -0.0100 -0.0000 0.5730 0.5705 0.5466 0.5664

Columns 19 through 27

-0.0674 -0.1222 -0.1133 -0.1154 -0.1296 -0.1300 -0.1266 -0.1276 -0.1280

-0.0434 -0.0953 -0.0867 -0.0883 -0.1028 -0.1034 -0.1000 -0.1010 -0.1015

0.0288 -0.0147 -0.0082 -0.0084 -0.0227 -0.0236 -0.0201 -0.0210 -0.0219

0.0128 -0.0346 -0.0283 -0.0288 -0.0429 -0.0437 -0.0400 -0.0410 -0.0418

-0.0000 -0.0489 -0.0422 -0.0430 -0.0571 -0.0578 -0.0542 -0.0551 -0.0559

0.0489 -0.0000 0.0061 0.0062 -0.0094 -0.0104 -0.0063 -0.0073 -0.0084

0.0422 -0.0061 -0.0000 -0.0000 -0.0152 -0.0162 -0.0121 -0.0131 -0.0142

0.0430 -0.0062 0.0000 -0.0000 -0.0155 -0.0165 -0.0123 -0.0134 -0.0144

0.0571 0.0094 0.0152 0.0155 -0.0000 -0.0011 0.0031 0.0021 0.0009

0.0578 0.0104 0.0162 0.0165 0.0011 -0.0000 0.0041 0.0031 0.0020

0.0542 0.0063 0.0121 0.0123 -0.0031 -0.0041 -0.0000 -0.0010 -0.0021

0.0551 0.0073 0.0131 0.0134 -0.0021 -0.0031 0.0010 -0.0000 -0.0011

0.0559 0.0084 0.0142 0.0144 -0.0009 -0.0020 0.0021 0.0011 -0.0000

0.0646 0.0185 0.0240 0.0244 0.0092 0.0081 0.0122 0.0112 0.0100

0.5615 0.5938 0.5837 0.5944 0.5856 0.5825 0.5856 0.5854 0.5823

0.5561 0.5904 0.5807 0.5913 0.5826 0.5796 0.5824 0.5823 0.5792

0.5240 0.5632 0.5539 0.5641 0.5571 0.5543 0.5565 0.5563 0.5536

0.5447 0.5842 0.5742 0.5847 0.5776 0.5747 0.5770 0.5769 0.5740

0.5472 0.5856 0.5753 0.5858 0.5786 0.5757 0.5782 0.5781 0.5751

0.5856 0.6312 0.6198 0.6311 0.6246 0.6215 0.6238 0.6238 0.6207

0.5753 0.6198 0.6087 0.6199 0.6132 0.6101 0.6124 0.6124 0.6093

0.5858 0.6311 0.6199 0.6312 0.6244 0.6213 0.6237 0.6236 0.6205

0.5786 0.6246 0.6132 0.6244 0.6181 0.6151 0.6173 0.6173 0.6142

0.5757 0.6215 0.6101 0.6213 0.6151 0.6121 0.6143 0.6143 0.6112

0.5782 0.6238 0.6124 0.6237 0.6173 0.6143 0.6166 0.6165 0.6135

0.5781 0.6238 0.6124 0.6236 0.6173 0.6143 0.6165 0.6165 0.6134

0.5751 0.6207 0.6093 0.6205 0.6142 0.6112 0.6135 0.6134 0.6104

0.5673 0.6131 0.6018 0.6128 0.6069 0.6039 0.6061 0.6060 0.6031

Column 28

-0.1360

-0.1097

-0.0306

-0.0507

-0.0646

-0.0185

-0.0240

-0.0244

-0.0092

-0.0081

-0.0122

-0.0112

-0.0100

-0.0000

0.5730

0.5705

0.5466

0.5664

0.5673

0.6131

0.6018

0.6128

0.6069

0.6039

0.6061

0.6060

0.6031

0.5960

0

0

0

0.4250

0

0

-0.2833

-0.4958

0

0.7437

0

0

0

0

0

0

0

0

0

0

0

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0

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0

0

12.7531

>>

Calling sedumi: 536 variables, 128 equality constraints

For improved efficiency, sedumi is solving the dual problem.

------------------------------------------------------------

SeDuMi 1.21 by AdvOL, 2005-2008 and Jos F. Sturm, 1998-2003.

Alg = 2: xz-corrector, Adaptive Step-Differentiation, theta = 0.250, beta = 0.500

eqs m = 128, order n = 157, dim = 917, blocks = 4

nnz(A) = 1204 + 0, nnz(ADA) = 15882, nnz(L) = 8005

it : b\*y gap delta rate t/tP\* t/tD\* feas cg cg prec

0 : 1.02E+002 0.000

1 : 4.91E+002 4.70E+001 0.000 0.4615 0.9000 0.9000 5.62 1 1 2.5E+001

2 : 5.16E+001 1.63E+001 0.000 0.3480 0.9000 0.9000 1.74 1 1 6.6E+000

3 : 1.69E+001 6.03E+000 0.000 0.3689 0.9000 0.9000 1.37 1 1 2.3E+000

4 : 1.11E+001 2.59E+000 0.000 0.4298 0.9000 0.9000 0.89 1 1 1.2E+000

5 : 2.20E+001 1.56E+000 0.000 0.6021 0.9000 0.9000 0.52 1 1 8.1E-001

6 : 3.78E+001 5.83E-001 0.000 0.3738 0.9000 0.9000 0.85 1 1 3.1E-001

7 : 4.52E+001 1.75E-001 0.000 0.2999 0.9000 0.9000 0.97 1 1 9.4E-002

8 : 4.78E+001 5.56E-004 0.000 0.0032 0.0000 0.9000 1.06 1 1 8.5E-002

9 : 4.78E+001 1.70E-004 0.000 0.3057 0.9000 0.0000 1.05 1 1 3.2E-002

10 : 4.81E+001 2.89E-005 0.000 0.1702 0.9155 0.9000 1.06 1 1 6.4E-003

11 : 4.82E+001 8.21E-006 0.000 0.2838 0.7977 0.9000 1.01 1 1 1.8E-003

12 : 4.83E+001 2.60E-006 0.000 0.3166 0.8257 0.9000 1.00 1 1 5.8E-004

13 : 4.83E+001 9.74E-007 0.000 0.3747 0.9000 0.9000 1.00 1 1 2.2E-004

14 : 4.83E+001 2.90E-007 0.000 0.2974 0.9000 0.9000 1.00 1 2 6.5E-005

15 : 4.83E+001 6.87E-008 0.000 0.2369 0.9000 0.9000 1.00 1 2 1.5E-005

16 : 4.83E+001 1.37E-008 0.000 0.1990 0.9000 0.9000 1.00 1 7 3.1E-006

17 : 4.83E+001 1.07E-010 0.000 0.0078 0.9990 0.9990 1.00 1 4 2.4E-008

18 : 4.83E+001 4.56E-012 0.237 0.0427 0.9900 0.9900 1.00 2 9 1.0E-009

iter seconds digits c\*x b\*y

18 4.3 Inf 4.8283267699e+001 4.8283267701e+001

|Ax-b| = 6.4e-009, [Ay-c]\_+ = 1.1E-009, |x|= 1.4e+001, |y|= 3.6e+002

Detailed timing (sec)

Pre IPM Post

1.234E+000 4.344E+000 3.438E-001

Max-norms: ||b||=3.324000e+000, ||c|| = 200,

Cholesky |add|=0, |skip| = 21, ||L.L|| = 57.1363.

------------------------------------------------------------

Status: Solved

Optimal value (cvx\_optval): +52.6233

1.0e-008 \*

0.5879

0.2140

-0.0451

0.4329

0.2237

0.1391

-0.0420

-0.0068

-0.0339

0.0547

-0.0325

0.0707

0.0436

-0.0333

-0.0262

0.1868

0.1012

-0.0204

0.0283

0.0272

0.0444

-0.0129

0.0171

0.0727

0.0173

-0.0019

-0.0136

0.0248

0.0317

0.0104

0.0121

0.0078

0.0228

0.0085

0.0200

-0.0024

0.0146

0.0260

0.0055

0.0096

-0.0000

-0.0000

45.3951

45.9983

46.4487

46.1347

45.7627

45.6627

45.7843

45.8861

45.8535

45.8647

45.8595

45.4500

-0.0000

0.0000

67.4401

67.6607

67.8348

67.5123

67.4407

67.3407

67.4673

67.6247

67.4780

67.5522

67.6526

67.5774

0.0000

0.0000

0.0000

54.2585

54.2347

0.0000

54.3088

0.0101

54.3358

54.2852

54.2374

54.1309

54.1487

54.1585

0.0000

0.0000

0.0000

54.3422

54.3751

0.0000

54.2986

0.0000

54.2764

54.3041

54.2947

54.3164

54.3682

54.3568

1.3310

0.0000

0.0000

0.0000

0.0000

1.0283

0.0000

0.0000

0.2012

0.0000

0.0000

0.0000

0.0000

0.0000

1.0e-008 \*

0.1682

0.1743

0.2217

0.2281

0.2266

0.1733

0.1955

0.2071

0.1743

0.1820

0.1825

0.1880

0.1953

0.2093

18

1.4708e-009

Columns 1 through 9

-0.0609 0.2639 -0.0711 -0.0527 0.1081 -0.1258 -0.2114 0.2350 0.0000

-0.0500 0.2651 -0.0687 -0.0553 0.1026 -0.1296 -0.2008 0.2422 0.0001

-0.0174 0.2622 -0.0601 -0.0617 0.0841 -0.1374 -0.1658 0.2576 0.0002

-0.0266 0.2606 -0.0621 -0.0594 0.0887 -0.1340 -0.1733 0.2494 0.0001

-0.0322 0.2601 -0.0631 -0.0576 0.0914 -0.1318 -0.1789 0.2459 0.0001

-0.0123 0.2708 0.1130 0.1875 -0.0396 0.0578 0.0786 -0.1092 0.0111

-0.0146 0.2674 -0.2564 -0.5010 0.1896 -0.4241 0.2697 -0.5683 0.0004

-0.0144 0.2652 -0.2543 -0.4968 -0.3205 0.7171 -0.0139 0.0293 -0.0000

-0.0078 0.2709 0.1122 0.1919 -0.0403 0.0604 0.0774 -0.1107 -0.0092

-0.0074 0.2691 0.1107 0.1903 -0.0396 0.0597 0.0769 -0.1104 -0.0078

-0.0093 0.2689 0.1111 0.1883 -0.0394 0.0586 0.0774 -0.1098 -0.0023

-0.0090 0.2679 0.1098 0.1869 -0.0387 0.0578 0.0769 -0.1095 0.0112

-0.0084 0.2668 0.1090 0.1865 -0.0385 0.0578 0.0764 -0.1092 0.0077

-0.0038 0.2651 0.1062 0.1884 -0.0380 0.0590 0.0744 -0.1100 0.0001

0.2639 0.0609 0.0527 -0.0711 -0.1258 -0.1081 0.2350 0.2114 0.0010

0.2651 0.0500 0.0553 -0.0687 -0.1296 -0.1026 0.2422 0.2008 0.0009

0.2622 0.0174 0.0617 -0.0601 -0.1374 -0.0841 0.2576 0.1658 0.0011

0.2606 0.0266 0.0594 -0.0621 -0.1340 -0.0887 0.2494 0.1733 0.0006

0.2601 0.0322 0.0576 -0.0631 -0.1318 -0.0914 0.2459 0.1789 0.0002

0.2708 0.0123 -0.1875 0.1130 0.0578 0.0396 -0.1092 -0.0786 -0.3369

0.2674 0.0146 0.5010 -0.2564 -0.4241 -0.1896 -0.5683 -0.2697 0.0026

0.2652 0.0144 0.4968 -0.2543 0.7171 0.3205 0.0293 0.0139 -0.0000

0.2709 0.0078 -0.1919 0.1122 0.0604 0.0403 -0.1107 -0.0774 0.4962

0.2691 0.0074 -0.1903 0.1107 0.0597 0.0396 -0.1104 -0.0769 0.4488

0.2689 0.0093 -0.1883 0.1111 0.0586 0.0394 -0.1098 -0.0774 0.0717

0.2679 0.0090 -0.1869 0.1098 0.0578 0.0387 -0.1095 -0.0769 -0.5084

0.2668 0.0084 -0.1865 0.1090 0.0578 0.0385 -0.1092 -0.0764 -0.3719

0.2651 0.0038 -0.1884 0.1062 0.0590 0.0380 -0.1100 -0.0744 0.1909

Columns 10 through 18

-0.0010 -0.0000 0.0004 -0.5374 -0.1503 0.0007 -0.0001 0.4360 0.0132

-0.0009 -0.0000 0.0003 -0.2697 -0.0636 0.0004 -0.0000 0.1843 0.0079

-0.0011 0.0000 0.0005 0.7664 0.0958 0.0005 -0.0002 0.4297 0.0679

-0.0006 -0.0000 0.0000 0.1187 0.0126 -0.0005 0.0001 -0.4950 -0.0688

-0.0002 -0.0000 -0.0002 -0.0300 -0.0099 -0.0008 0.0001 -0.5765 -0.0660

0.3369 0.0044 -0.1533 -0.0000 -0.0000 -0.1436 -0.0030 -0.0012 -0.0001

-0.0026 0.0000 0.0001 -0.0004 0.0000 0.0006 -0.0001 0.0010 0.0003

0.0000 -0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000 -0.0000 -0.0000

-0.4962 -0.0002 0.0387 0.0000 -0.0000 0.4046 0.0016 -0.0011 0.0000

-0.4488 0.0040 -0.2579 0.0000 0.0000 0.2663 0.0007 -0.0001 0.0001

-0.0717 0.0113 -0.5442 -0.0000 0.0000 -0.6105 -0.0057 0.0022 0.0000

0.5084 -0.0014 0.0383 0.0002 0.0000 0.4374 0.0034 0.0014 0.0002

0.3719 -0.0024 0.1184 0.0001 0.0000 0.0597 0.0006 0.0002 0.0000

-0.1909 -0.0003 0.7725 -0.0001 -0.0000 -0.4209 0.0046 0.0006 -0.0000

0.0000 0.0004 0.0000 -0.1503 0.5374 -0.0001 -0.0007 -0.0132 0.4360

0.0001 0.0003 0.0000 -0.0636 0.2697 -0.0000 -0.0004 -0.0079 0.1843

0.0002 0.0005 -0.0000 0.0958 -0.7664 -0.0002 -0.0005 -0.0679 0.4297

0.0001 0.0000 0.0000 0.0126 -0.1187 0.0001 0.0005 0.0688 -0.4950

0.0001 -0.0002 0.0000 -0.0099 0.0300 0.0001 0.0008 0.0660 -0.5765

0.0111 -0.1533 -0.0044 -0.0000 0.0000 -0.0030 0.1436 0.0001 -0.0012

0.0004 0.0001 -0.0000 0.0000 0.0004 -0.0001 -0.0006 -0.0003 0.0010

-0.0000 -0.0000 0.0000 -0.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000

-0.0092 0.0387 0.0002 -0.0000 -0.0000 0.0016 -0.4046 -0.0000 -0.0011

-0.0078 -0.2579 -0.0040 0.0000 -0.0000 0.0007 -0.2663 -0.0001 -0.0001

-0.0023 -0.5442 -0.0113 0.0000 0.0000 -0.0057 0.6105 -0.0000 0.0022

0.0112 0.0383 0.0014 0.0000 -0.0002 0.0034 -0.4374 -0.0002 0.0014

0.0077 0.1184 0.0024 0.0000 -0.0001 0.0006 -0.0597 -0.0000 0.0002

0.0001 0.7725 0.0003 -0.0000 0.0001 0.0046 0.4209 0.0000 0.0006

Columns 19 through 27

-0.0009 0.0001 0.0001 -0.0003 0.0005 -0.0000 -0.5328 0.0121 -0.0205

-0.0000 0.0000 -0.0000 0.0002 -0.0005 0.0000 0.8249 0.0104 0.0094

-0.0009 -0.0001 -0.0000 -0.0003 0.0004 -0.0000 -0.0862 -0.0142 0.0121

0.0018 0.0001 0.0000 0.0007 -0.0012 0.0001 -0.0536 -0.0025 -0.1043

0.0012 -0.0000 -0.0001 0.0002 0.0000 0.0000 -0.1575 -0.0094 0.1083

-0.5367 0.0152 0.0155 -0.3127 0.5581 -0.0004 0.0006 0.0000 -0.0002

-0.0001 -0.0000 -0.0000 -0.0004 -0.0002 0.0000 0.0000 0.0000 -0.0000

0.0000 0.0000 0.0000 0.0000 0.0000 -0.0000 -0.0000 -0.0000 0.0000

-0.1585 0.0019 0.0193 -0.5635 -0.3147 0.0051 -0.0000 0.0000 -0.0000

0.0121 -0.0001 -0.0201 0.6170 0.3682 -0.0066 0.0001 -0.0000 0.0000

0.3189 -0.0057 0.0039 -0.0955 -0.2678 0.0030 -0.0002 -0.0000 0.0000

0.6214 -0.0100 0.0037 -0.1053 0.0985 -0.0016 -0.0000 -0.0000 0.0000

-0.4146 0.0056 -0.0151 0.4249 -0.5923 0.0088 -0.0003 -0.0000 0.0001

0.1629 0.0004 -0.0007 0.0449 0.1467 -0.0045 0.0000 0.0000 0.0000

-0.0001 -0.0009 -0.0003 -0.0001 -0.0000 -0.0005 -0.0121 -0.5328 0.0718

-0.0000 -0.0000 0.0002 0.0000 0.0000 0.0005 -0.0104 0.8249 -0.0411

0.0001 -0.0009 -0.0003 0.0000 -0.0000 -0.0004 0.0142 -0.0862 -0.1008

-0.0001 0.0018 0.0007 -0.0000 0.0001 0.0012 0.0025 -0.0536 0.7268

0.0000 0.0012 0.0002 0.0001 0.0000 -0.0000 0.0094 -0.1575 -0.6569

-0.0152 -0.5367 -0.3127 -0.0155 -0.0004 -0.5581 -0.0000 0.0006 0.0011

0.0000 -0.0001 -0.0004 0.0000 0.0000 0.0002 -0.0000 0.0000 -0.0005

-0.0000 0.0000 0.0000 -0.0000 -0.0000 -0.0000 0.0000 -0.0000 0.0000

-0.0019 -0.1585 -0.5635 -0.0193 0.0051 0.3147 -0.0000 -0.0000 -0.0001

0.0001 0.0121 0.6170 0.0201 -0.0066 -0.3682 0.0000 0.0001 0.0001

0.0057 0.3189 -0.0955 -0.0039 0.0030 0.2678 0.0000 -0.0002 -0.0002

0.0100 0.6214 -0.1053 -0.0037 -0.0016 -0.0985 0.0000 -0.0000 -0.0001

-0.0056 -0.4146 0.4249 0.0151 0.0088 0.5923 0.0000 -0.0003 -0.0003

-0.0004 0.1629 0.0449 0.0007 -0.0045 -0.1467 -0.0000 0.0000 0.0000

Columns 28 through 36

-0.0718 -0.0000 0 0 0 0 0 0 0

0.0411 0 -0.0000 0 0 0 0 0 0

0.1008 0 0 0.0000 0 0 0 0 0

-0.7268 0 0 0 0.0000 0 0 0 0

0.6569 0 0 0 0 0.0191 0 0 0

-0.0011 0 0 0 0 0 0.0191 0 0

0.0005 0 0 0 0 0 0 0.2436 0

-0.0000 0 0 0 0 0 0 0 0.2436

0.0001 0 0 0 0 0 0 0 0

-0.0001 0 0 0 0 0 0 0 0

0.0002 0 0 0 0 0 0 0 0

0.0001 0 0 0 0 0 0 0 0

0.0003 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

-0.0205 0 0 0 0 0 0 0 0

0.0094 0 0 0 0 0 0 0 0

0.0121 0 0 0 0 0 0 0 0

-0.1043 0 0 0 0 0 0 0 0

0.1083 0 0 0 0 0 0 0 0

-0.0002 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

0.0000 0 0 0 0 0 0 0 0

0.0001 0 0 0 0 0 0 0 0

-0.0000 0 0 0 0 0 0 0 0

Columns 37 through 45

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

26.0031 0 0 0 0 0 0 0 0

0 26.0031 0 0 0 0 0 0 0

0 0 52.2234 0 0 0 0 0 0

0 0 0 52.2234 0 0 0 0 0

0 0 0 0 70.8359 0 0 0 0

0 0 0 0 0 70.8359 0 0 0

0 0 0 0 0 0 91.4347 0 0

0 0 0 0 0 0 0 91.4347 0

0 0 0 0 0 0 0 0 108.5930

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

Columns 46 through 54

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

108.5930 0 0 0 0 0 0 0 0

0 153.1132 0 0 0 0 0 0 0

0 0 153.1132 0 0 0 0 0 0

0 0 0 209.4096 0 0 0 0 0

0 0 0 0 209.4096 0 0 0 0

0 0 0 0 0 227.8758 0 0 0

0 0 0 0 0 0 227.8758 0 0

0 0 0 0 0 0 0 273.9083 0

0 0 0 0 0 0 0 0 273.9083

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

Columns 55 through 56

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

0 0

374.8798 0

0 374.8798

-0.0000

-0.0000

0.0000

0.0000

0.0191

0.0191

0.2436

0.2436

26.0031

26.0031

52.2234

52.2234

70.8359

70.8359

91.4347

91.4347

108.5930

108.5930

153.1132

153.1132

209.4096

209.4096

227.8758

227.8758

273.9083

273.9083

374.8798

374.8798

-1.1491e-009

28

Columns 1 through 9

-0.5091 -0.5066 -0.4876 -0.4886 -0.4900 -0.5019 -0.4950 -0.4911 -0.5000

-0.5066 -0.5030 -0.4812 -0.4831 -0.4849 -0.4948 -0.4882 -0.4843 -0.4925

-0.4876 -0.4812 -0.4518 -0.4562 -0.4594 -0.4631 -0.4574 -0.4538 -0.4597

-0.4886 -0.4831 -0.4562 -0.4597 -0.4626 -0.4680 -0.4621 -0.4584 -0.4649

-0.4900 -0.4849 -0.4594 -0.4626 -0.4652 -0.4716 -0.4656 -0.4619 -0.4688

-0.5019 -0.4948 -0.4631 -0.4680 -0.4716 -0.4740 -0.4690 -0.4653 -0.4703

-0.4950 -0.4882 -0.4574 -0.4621 -0.4656 -0.4690 -0.4623 -0.4586 -0.4654

-0.4911 -0.4843 -0.4538 -0.4584 -0.4619 -0.4653 -0.4586 -0.4550 -0.4618

-0.5000 -0.4925 -0.4597 -0.4649 -0.4688 -0.4703 -0.4654 -0.4618 -0.4664

-0.4965 -0.4890 -0.4563 -0.4616 -0.4654 -0.4668 -0.4620 -0.4584 -0.4630

-0.4970 -0.4897 -0.4575 -0.4626 -0.4663 -0.4681 -0.4633 -0.4596 -0.4644

-0.4951 -0.4878 -0.4556 -0.4607 -0.4644 -0.4662 -0.4613 -0.4577 -0.4624

-0.4947 -0.4873 -0.4551 -0.4602 -0.4640 -0.4657 -0.4608 -0.4572 -0.4619

-0.4877 -0.4800 -0.4469 -0.4523 -0.4563 -0.4570 -0.4524 -0.4488 -0.4531

-0.0000 0.0253 0.0978 0.0761 0.0633 0.1139 0.1076 0.1067 0.1240

0.0206 0.0457 0.1172 0.0955 0.0828 0.1337 0.1271 0.1261 0.1437

0.0794 0.1032 0.1698 0.1491 0.1370 0.1874 0.1803 0.1788 0.1968

0.0627 0.0867 0.1540 0.1332 0.1211 0.1711 0.1642 0.1629 0.1806

0.0510 0.0751 0.1430 0.1222 0.1100 0.1599 0.1531 0.1518 0.1694

0.0922 0.1166 0.1846 0.1633 0.1510 0.2029 0.1954 0.1938 0.2125

0.0857 0.1100 0.1776 0.1565 0.1442 0.1957 0.1883 0.1867 0.2052

0.0834 0.1075 0.1746 0.1537 0.1415 0.1925 0.1852 0.1836 0.2020

0.1003 0.1245 0.1919 0.1708 0.1585 0.2104 0.2029 0.2012 0.2200

0.1001 0.1242 0.1911 0.1702 0.1580 0.2095 0.2020 0.2003 0.2190

0.0971 0.1213 0.1883 0.1673 0.1551 0.2067 0.1992 0.1975 0.2162

0.0970 0.1211 0.1879 0.1669 0.1548 0.2061 0.1987 0.1970 0.2156

0.0973 0.1213 0.1877 0.1669 0.1548 0.2059 0.1985 0.1968 0.2154

0.1049 0.1285 0.1940 0.1734 0.1614 0.2123 0.2048 0.2031 0.2216

Columns 10 through 18

-0.4965 -0.4970 -0.4951 -0.4947 -0.4877 -0.0000 0.0206 0.0794 0.0627

-0.4890 -0.4897 -0.4878 -0.4873 -0.4800 0.0253 0.0457 0.1032 0.0867

-0.4563 -0.4575 -0.4556 -0.4551 -0.4469 0.0978 0.1172 0.1698 0.1540

-0.4616 -0.4626 -0.4607 -0.4602 -0.4523 0.0761 0.0955 0.1491 0.1332

-0.4654 -0.4663 -0.4644 -0.4640 -0.4563 0.0633 0.0828 0.1370 0.1211

-0.4668 -0.4681 -0.4662 -0.4657 -0.4570 0.1139 0.1337 0.1874 0.1711

-0.4620 -0.4633 -0.4613 -0.4608 -0.4524 0.1076 0.1271 0.1803 0.1642

-0.4584 -0.4596 -0.4577 -0.4572 -0.4488 0.1067 0.1261 0.1788 0.1629

-0.4630 -0.4644 -0.4624 -0.4619 -0.4531 0.1240 0.1437 0.1968 0.1806

-0.4596 -0.4609 -0.4590 -0.4585 -0.4498 0.1241 0.1437 0.1963 0.1803

-0.4609 -0.4623 -0.4603 -0.4598 -0.4511 0.1197 0.1393 0.1921 0.1761

-0.4590 -0.4603 -0.4584 -0.4579 -0.4493 0.1198 0.1393 0.1919 0.1759

-0.4585 -0.4598 -0.4579 -0.4573 -0.4487 0.1205 0.1400 0.1926 0.1766

-0.4498 -0.4511 -0.4493 -0.4487 -0.4400 0.1301 0.1492 0.2006 0.1849

0.1241 0.1197 0.1198 0.1205 0.1301 0.6312 0.6284 0.6046 0.6057

0.1437 0.1393 0.1393 0.1400 0.1492 0.6284 0.6248 0.5987 0.6005

0.1963 0.1921 0.1919 0.1926 0.2006 0.6046 0.5987 0.5667 0.5704

0.1803 0.1761 0.1759 0.1766 0.1849 0.6057 0.6005 0.5704 0.5736

0.1692 0.1650 0.1649 0.1656 0.1740 0.6077 0.6029 0.5741 0.5768

0.2120 0.2077 0.2075 0.2081 0.2162 0.6207 0.6142 0.5802 0.5843

0.2048 0.2005 0.2003 0.2009 0.2091 0.6159 0.6097 0.5765 0.5805

0.2015 0.1973 0.1970 0.1977 0.2058 0.6106 0.6045 0.5718 0.5757

0.2195 0.2152 0.2149 0.2156 0.2235 0.6188 0.6120 0.5771 0.5815

0.2185 0.2142 0.2139 0.2146 0.2225 0.6145 0.6077 0.5730 0.5774

0.2157 0.2114 0.2111 0.2118 0.2197 0.6150 0.6083 0.5739 0.5782

0.2151 0.2108 0.2106 0.2112 0.2191 0.6126 0.6059 0.5716 0.5759

0.2148 0.2106 0.2103 0.2110 0.2189 0.6098 0.6031 0.5689 0.5732

0.2210 0.2168 0.2165 0.2171 0.2248 0.6036 0.5966 0.5618 0.5663

Columns 19 through 27

0.0510 0.0922 0.0857 0.0834 0.1003 0.1001 0.0971 0.0970 0.0973

0.0751 0.1166 0.1100 0.1075 0.1245 0.1242 0.1213 0.1211 0.1213

0.1430 0.1846 0.1776 0.1746 0.1919 0.1911 0.1883 0.1879 0.1877

0.1222 0.1633 0.1565 0.1537 0.1708 0.1702 0.1673 0.1669 0.1669

0.1100 0.1510 0.1442 0.1415 0.1585 0.1580 0.1551 0.1548 0.1548

0.1599 0.2029 0.1957 0.1925 0.2104 0.2095 0.2067 0.2061 0.2059

0.1531 0.1954 0.1883 0.1852 0.2029 0.2020 0.1992 0.1987 0.1985

0.1518 0.1938 0.1867 0.1836 0.2012 0.2003 0.1975 0.1970 0.1968

0.1694 0.2125 0.2052 0.2020 0.2200 0.2190 0.2162 0.2156 0.2154

0.1692 0.2120 0.2048 0.2015 0.2195 0.2185 0.2157 0.2151 0.2148

0.1650 0.2077 0.2005 0.1973 0.2152 0.2142 0.2114 0.2108 0.2106

0.1649 0.2075 0.2003 0.1970 0.2149 0.2139 0.2111 0.2106 0.2103

0.1656 0.2081 0.2009 0.1977 0.2156 0.2146 0.2118 0.2112 0.2110

0.1740 0.2162 0.2091 0.2058 0.2235 0.2225 0.2197 0.2191 0.2189

0.6077 0.6207 0.6159 0.6106 0.6188 0.6145 0.6150 0.6126 0.6098

0.6029 0.6142 0.6097 0.6045 0.6120 0.6077 0.6083 0.6059 0.6031

0.5741 0.5802 0.5765 0.5718 0.5771 0.5730 0.5739 0.5716 0.5689

0.5768 0.5843 0.5805 0.5757 0.5815 0.5774 0.5782 0.5759 0.5732

0.5799 0.5883 0.5843 0.5794 0.5856 0.5815 0.5823 0.5800 0.5773

0.5883 0.5940 0.5897 0.5849 0.5906 0.5864 0.5875 0.5851 0.5823

0.5843 0.5897 0.5872 0.5824 0.5865 0.5823 0.5833 0.5809 0.5782

0.5794 0.5849 0.5824 0.5776 0.5817 0.5776 0.5786 0.5762 0.5735

0.5856 0.5906 0.5865 0.5817 0.5871 0.5830 0.5840 0.5817 0.5789

0.5815 0.5864 0.5823 0.5776 0.5830 0.5788 0.5799 0.5775 0.5748

0.5823 0.5875 0.5833 0.5786 0.5840 0.5799 0.5809 0.5786 0.5758

0.5800 0.5851 0.5809 0.5762 0.5817 0.5775 0.5786 0.5762 0.5735

0.5773 0.5823 0.5782 0.5735 0.5789 0.5748 0.5758 0.5735 0.5707

0.5705 0.5748 0.5708 0.5663 0.5713 0.5672 0.5683 0.5660 0.5633

Column 28

0.1049

0.1285

0.1940

0.1734

0.1614

0.2123

0.2048

0.2031

0.2216

0.2210

0.2168

0.2165

0.2171

0.2248

0.6036

0.5966

0.5618

0.5663

0.5705

0.5748

0.5708

0.5663

0.5713

0.5672

0.5683

0.5660

0.5633

0.5558

0.7278

0.5278

-0.7185

0.6757

0.5433

0.4197

-0.6567

-0.1805

-0.5281

0.1831

-0.5180

0.2402

0.1420

-0.5144

-0.4106

0.5217

0.3407

-0.3407

0.0676

0.0616

0.1397

-0.2402

-0.0088

0.2620

0.0088

-0.1420

-0.2620

0.0455

0.0837

-0.0453

-0.0319

-0.0672

0.0320

-0.0612

0.0109

-0.1384

-0.0109

0.0550

-0.0826

-0.0545

48.0092

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