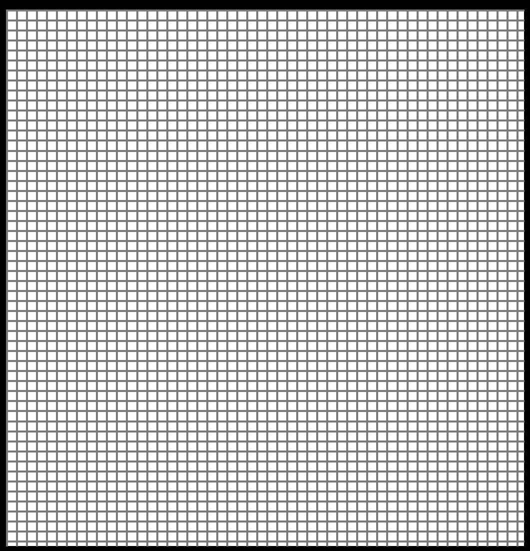
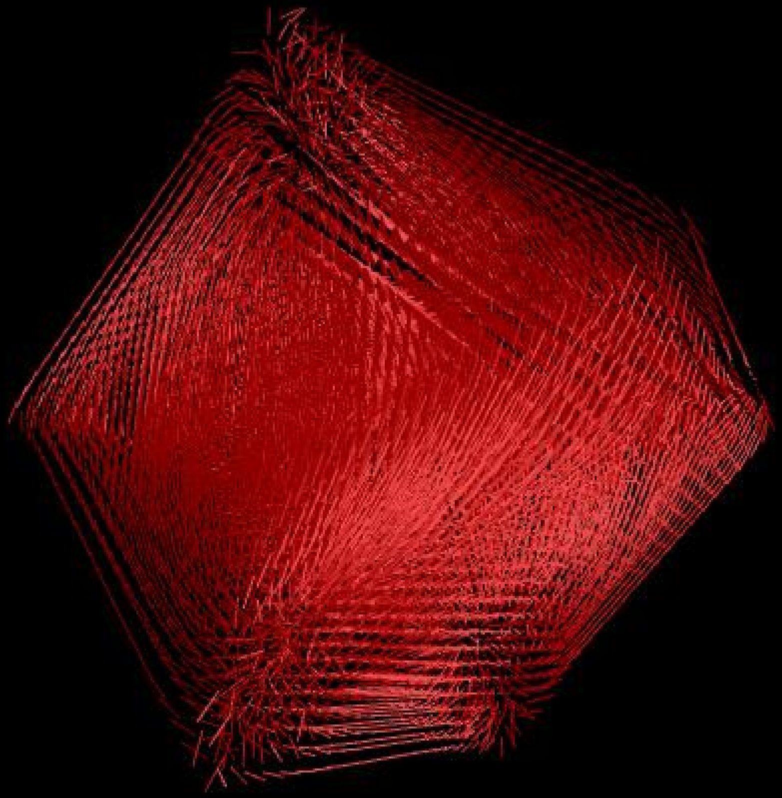
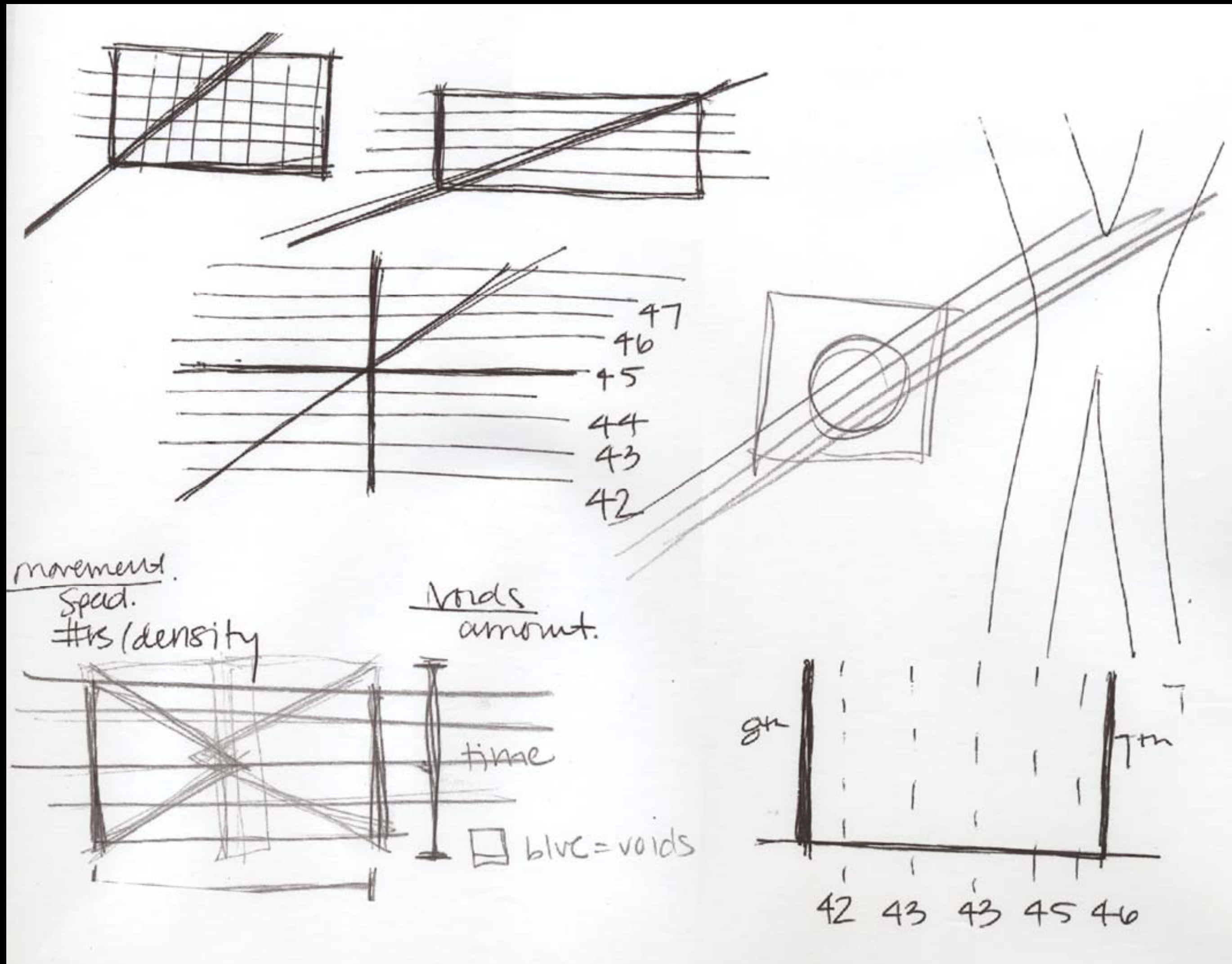
diagramming times square - evan pruitt

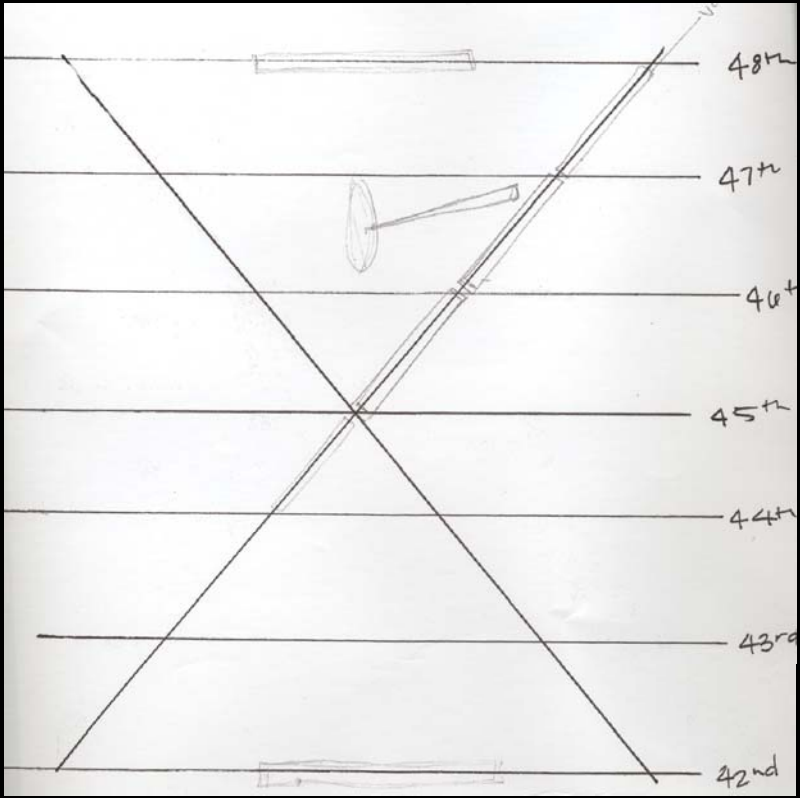


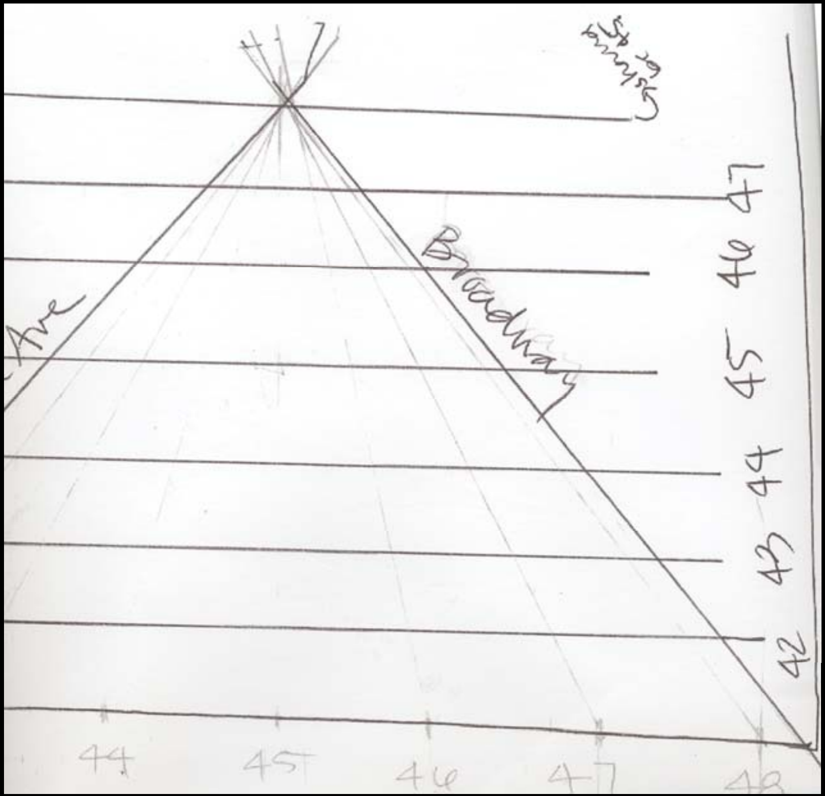


the grid

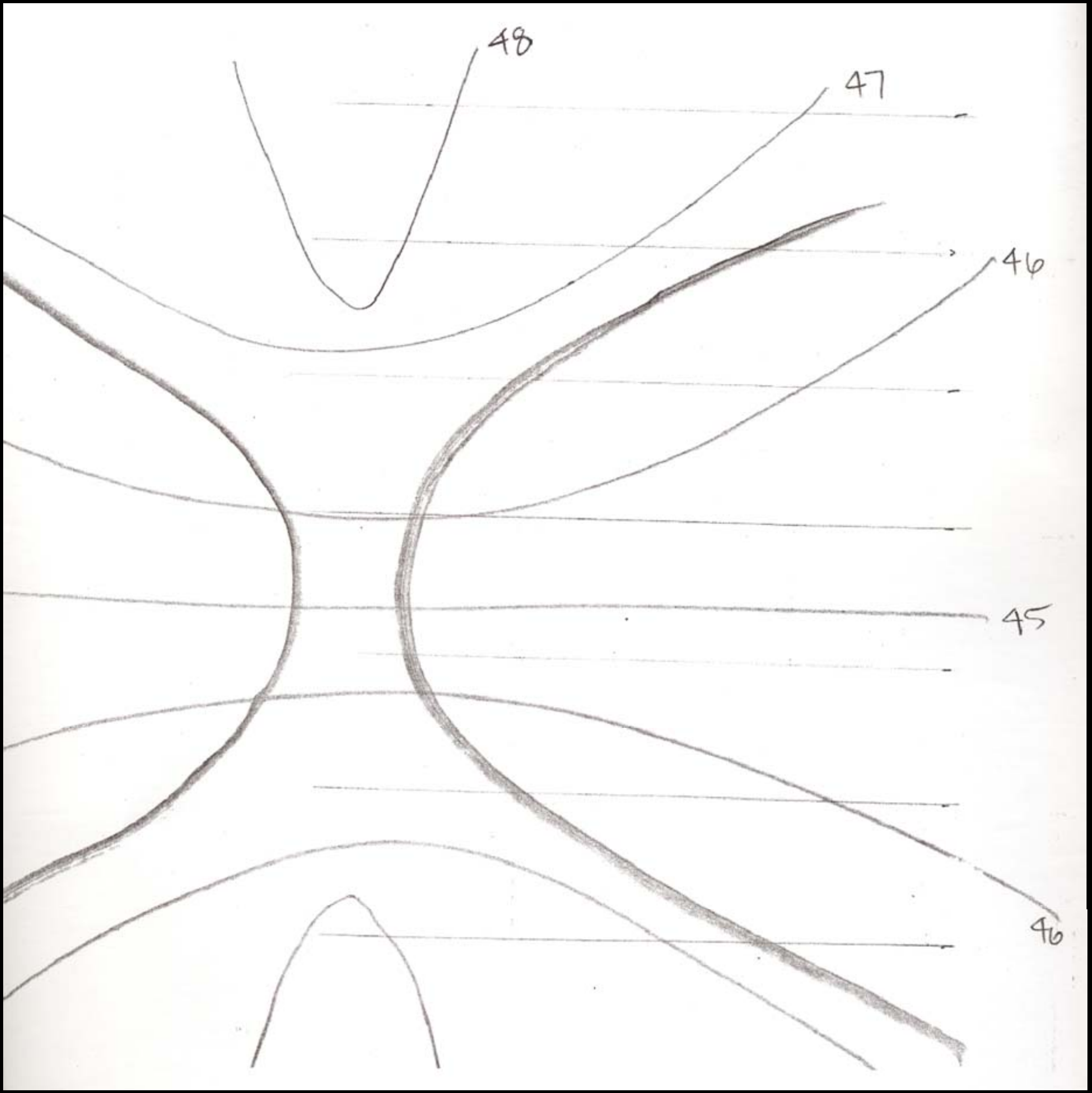


trying to find a way to put times square on one 2d surface





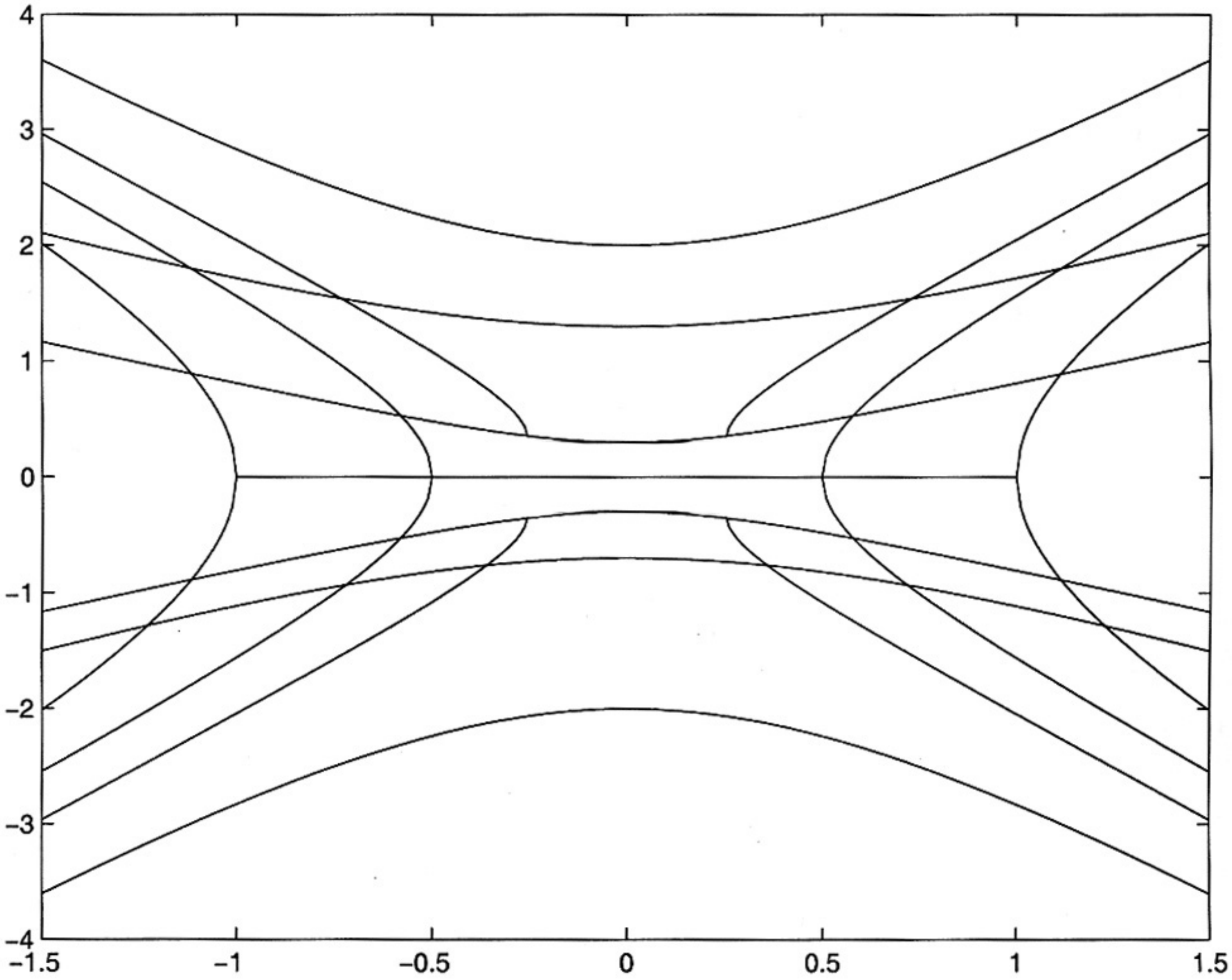
still trying….



ok…maybe hyperbolas

```
x = (-1.5:.01:1.5);

%Blue
a = 1;b = 1;
m = 0;j = .3;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);

%Green
a = 1;b = 2;
m = 0;j = 0;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);

%Red
a = .4;b = .3;
m = 0;j = 0;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);

%Yellow
a = .25;b = .45;
m = 0;j = .3;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;

%Black
a = .5;b = .9;
m = 0;j = 0;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;

%Cyan
a = 1;b = 1.8;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;

figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', ↙
x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, 'k-', x, y6r, 'c-', x, y6l, 'c-');
```

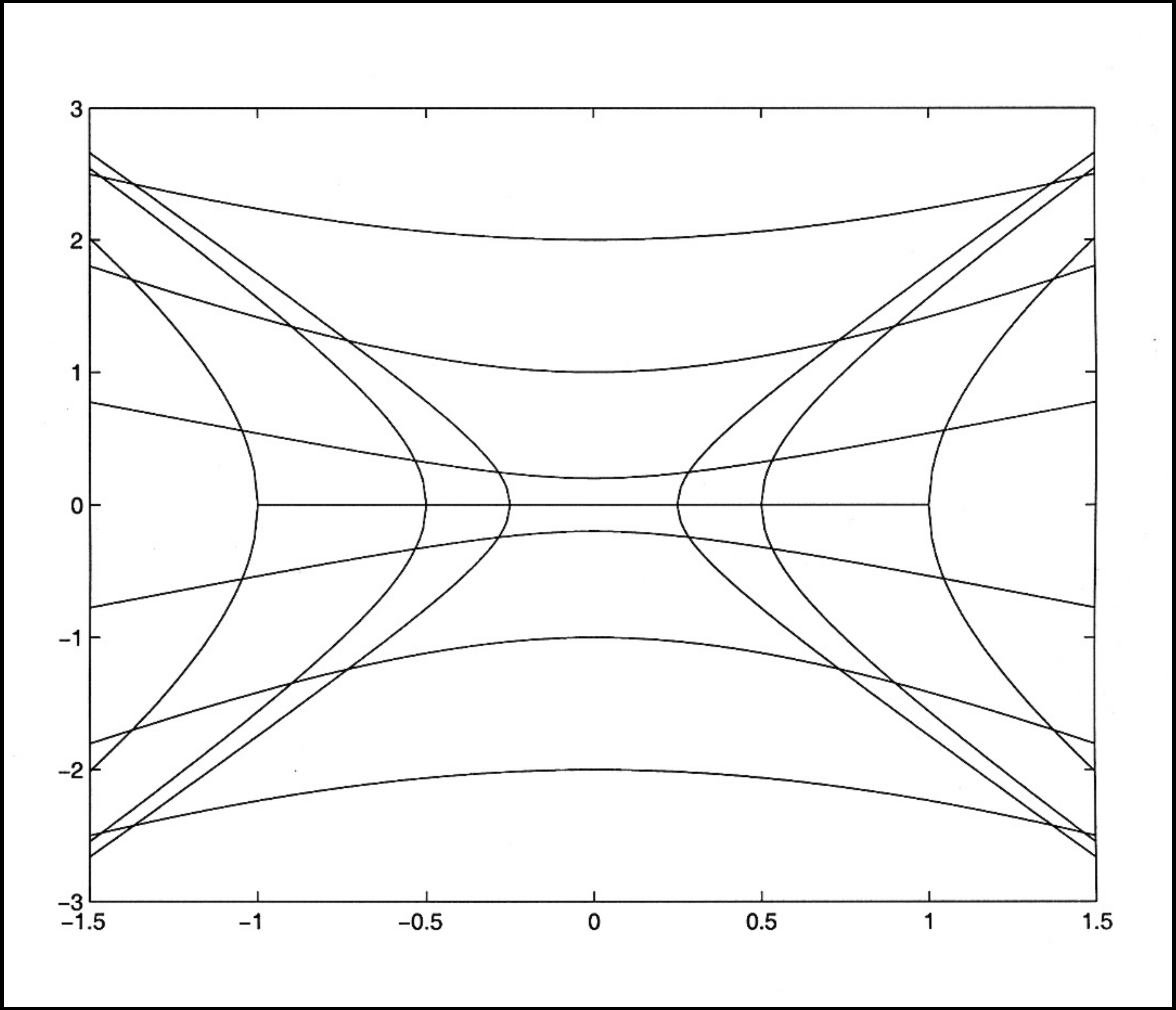
using mat-lab to define an interactive system of hyperbolas



the corresponding graph

```
x = (-1.5:.01:1.5);

%Blue
a = 1;b = 1;
m = 0;j = 0;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);

%Green
a = 2;b = 2;
m = 0;j = 0;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);

%Red
a = .4;b = .2;
m = 0;j = 0;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);

%Yellow
a = .25;b = .45;
m = 0;j = 0;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;

%Black
a = .5;b = .9;
m = 0;j = 0;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;

%Cyan
a = 1;b = 1.8;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;

figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', ↙
x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, 'k-', x, y6r, 'c-', x, y6l, 'c-');
```

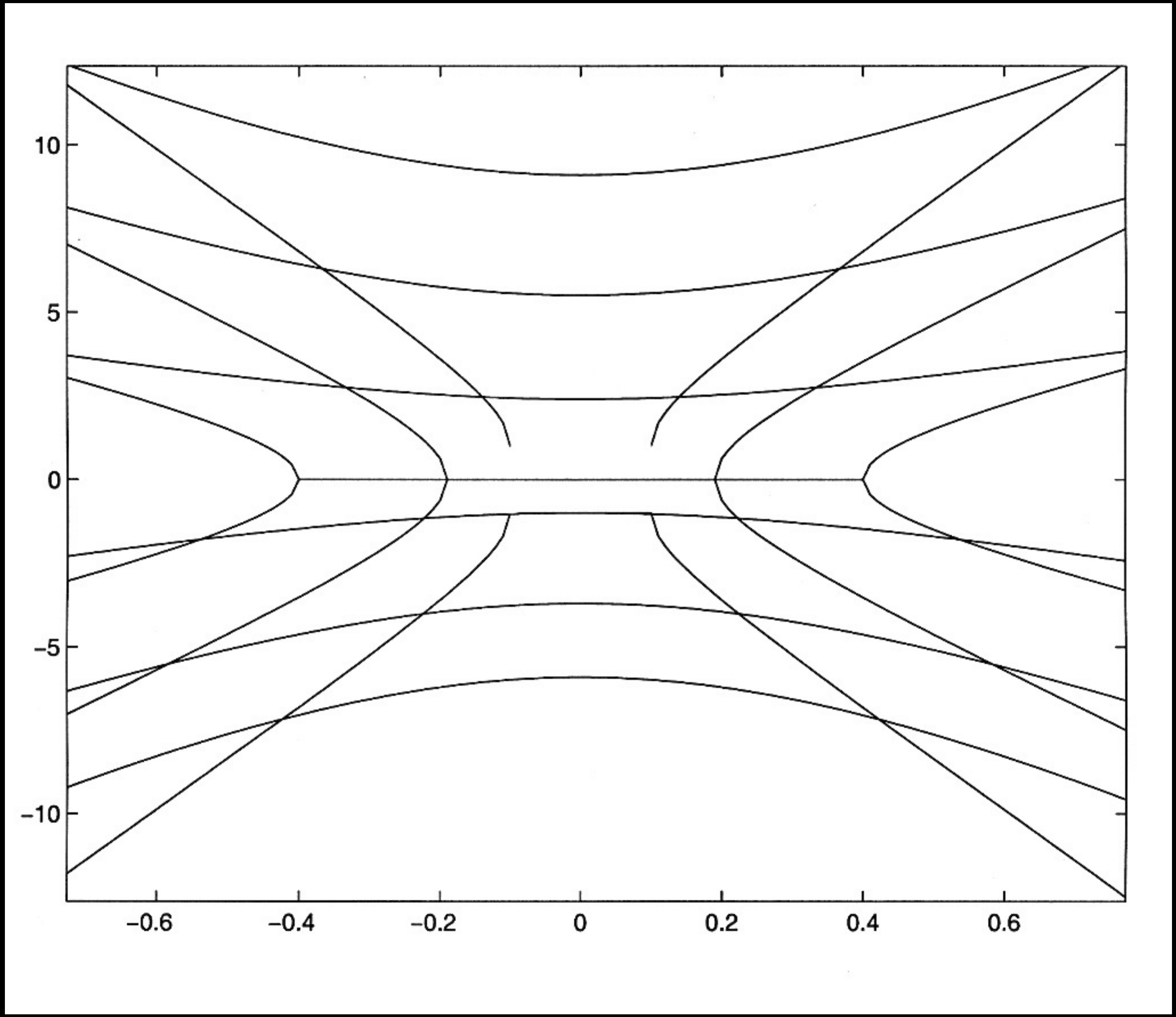
changing variables in the equations changed the diagram



trying to find a representative of the compressive forces in the square

```
x = (-1.5:.01:1.5);

%Blue
a = .6;b = 4.6;
m = 0;j = .9;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);

%Green
a = .7;b = 7.5;
m = 0;j = 1.6;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);

%Red
a = .5;b = 1.7;
m = 0;j = .7;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);

%Yellow
a = .1;b = 1.5;
m = 0;j = 1;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;

%Black
a = .19;b = 1.9;
m = 0;j = 0;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;

%Cyan
a = .4;b = 2;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;

figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', ↙
x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, 'k-', x, y6r, 'c-', x, y6l, 'c-');
```

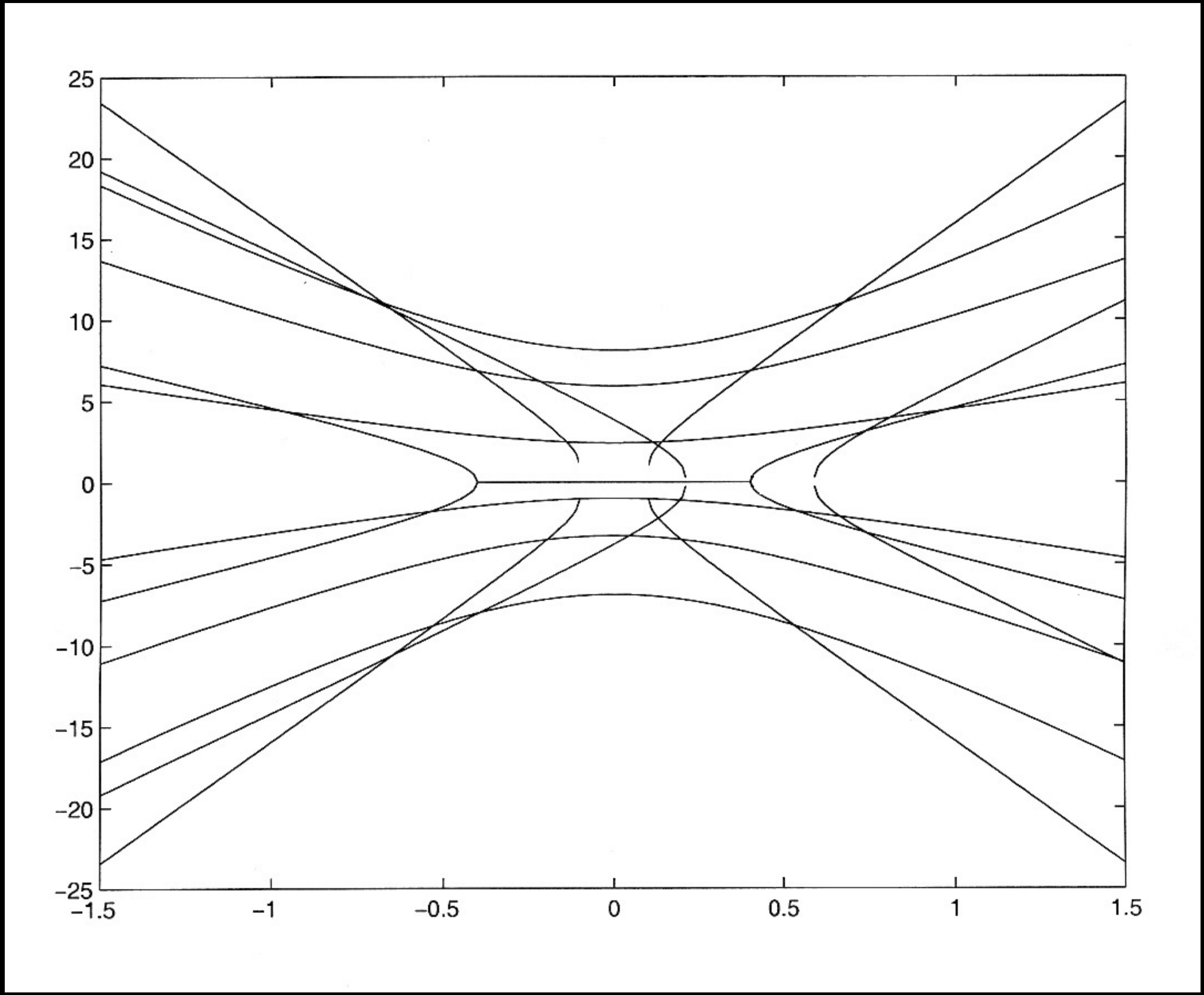
tried over 150 versions…



spent hours that i thought i should have spent designing…

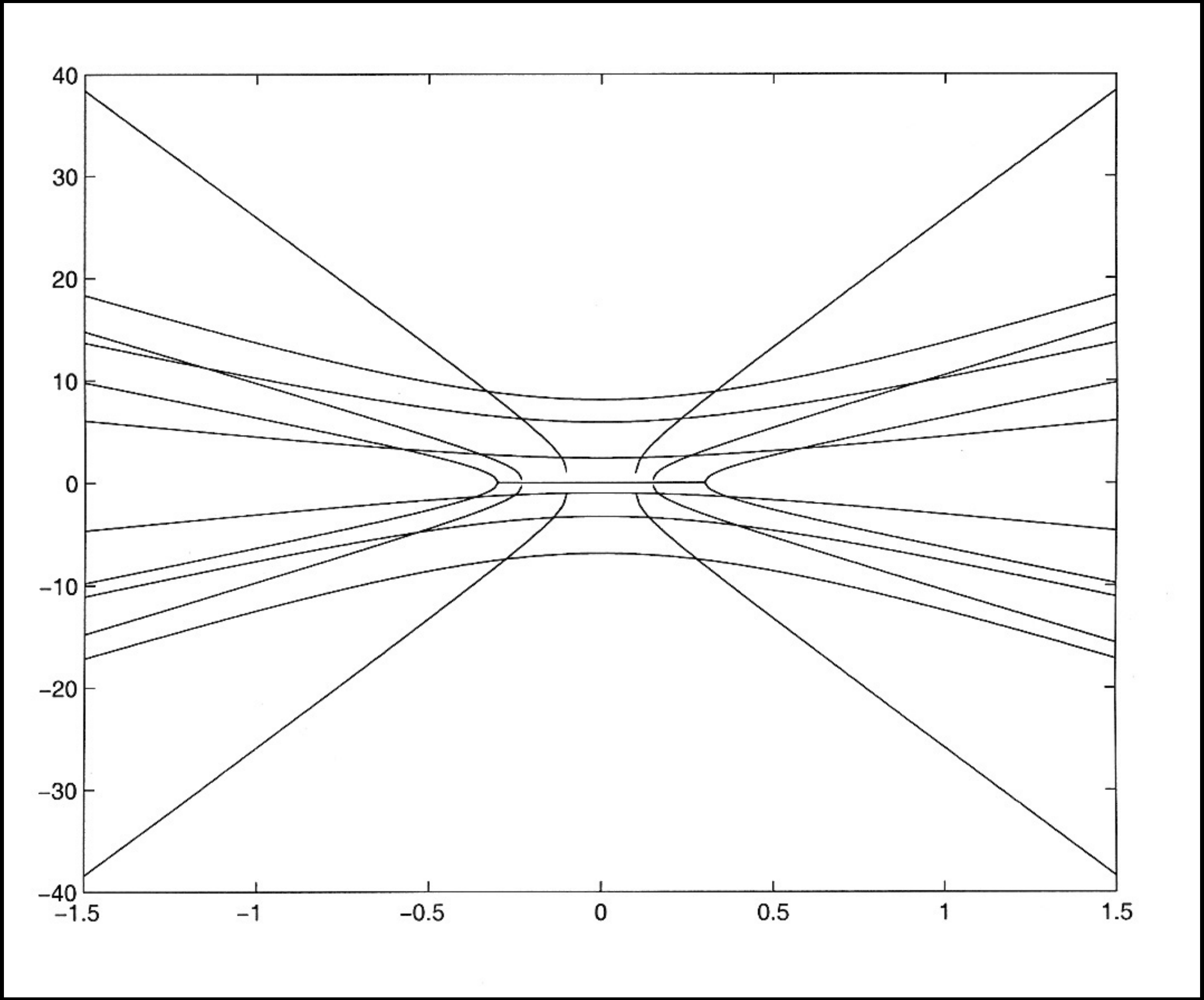
```
%Blue
a = .6;b = 4.6;
m = 0;j = 1.3;
y1t = j + b*sqrt((x – m).^2/a^2 + 1);
y1b = j – b*sqrt((x – m).^2/a^2 + 1);
%Green
a = .7;b = 7.5;
m = 0;j = .6;
y2t = j + b*sqrt((x – m).^2/a^2 + 1);
y2b = j – b*sqrt((x – m).^2/a^2 + 1);
%Red
a = .5;b = 1.7;
m = 0;j = .7;
y3t = j + b*sqrt((x – m).^2/a^2 + 1);
y3b = j – b*sqrt((x – m).^2/a^2 + 1);
%Yellow
a = .1;b = 1.5;
m = 0;j = 1;
y4l = j + b*sqrt((x – m).^2/a^2 – 1);
y4r = –y4l;
%Black
a = .19;b = 1.9;
m = .4;j = .3;
y5l = j + b*sqrt((x – m).^2/a^2 – 1);
y5r = –y5l;
%Cyan
a = .4;b = 2;
m = 0;j = 0;
y6l = j + b*sqrt((x – m).^2/a^2 – 1);
y6r = –y6l;
figure(2);
plot(x, y1t, 'b–', x, y1b, 'b–', x, y2t, 'g–', x, y2b, 'g–', x, y3t, 'r–', x, y3b, 'r–', x, y4l, 'y–', x, y4r, 'y–', x, y5l, 'k–', x, y5r, ' ↙
k–', x, y6r, 'c–', x, y6l, 'c–');
```

not yet….



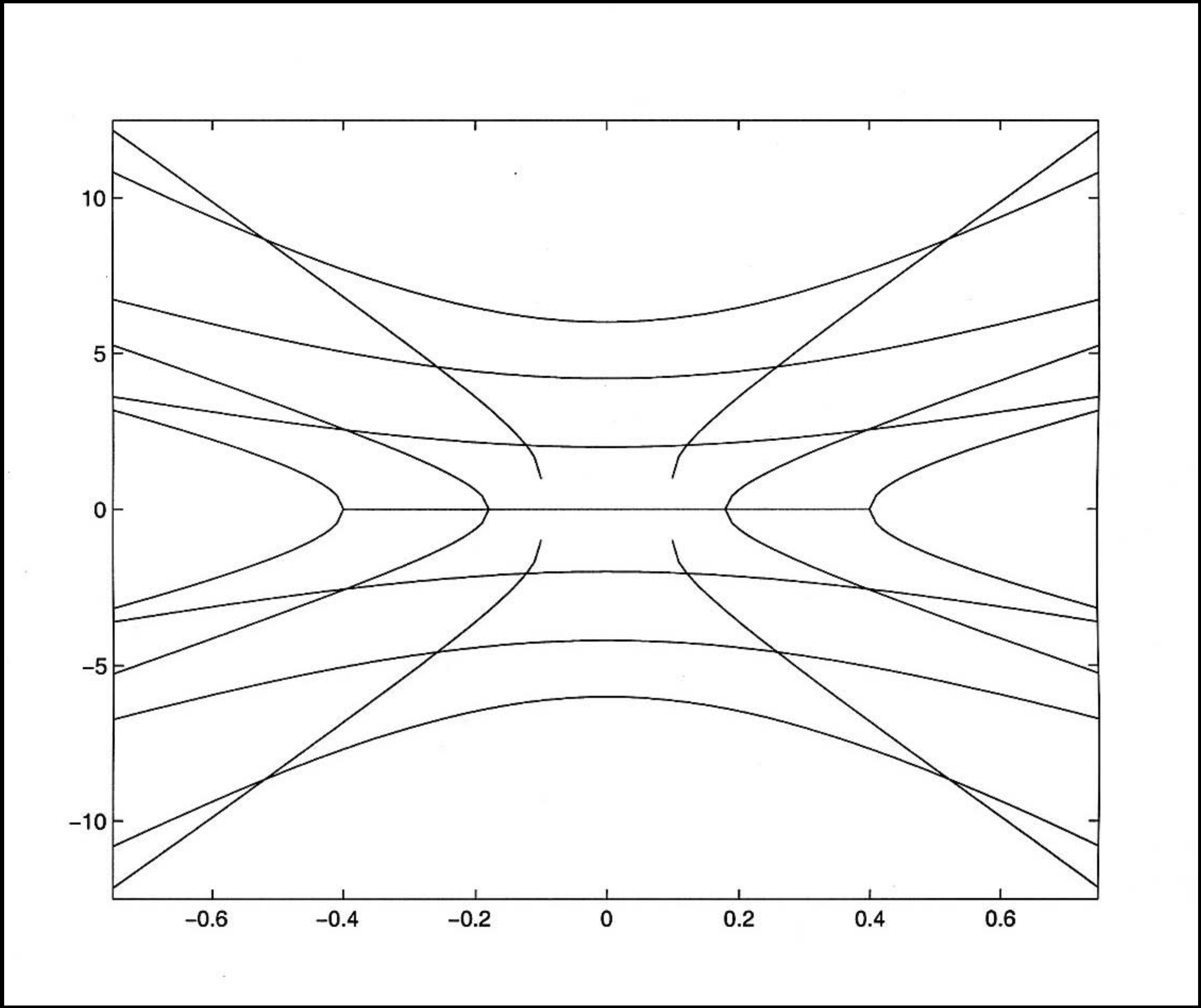
“the big shift”

```
%Blue
a = .6;b = 4.6;
m = 0;j = 1.3;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);
%Green
a = .7;b = 7.5;
m = 0;j = .6;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);
%Red
a = .5;b = 1.7;
m = 0;j = .7;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);
%Yellow
a = .1;b = 2.5;
m = 0;j = 1;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;
%Black
a = .19;b = 1.9;
m = -.04;j = .3;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;
%Cyan
a = .3;b = 2;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;
figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, ' ↙
k-', x, y6r, 'c-', x, y6l, 'c-');
```



“the big compression”

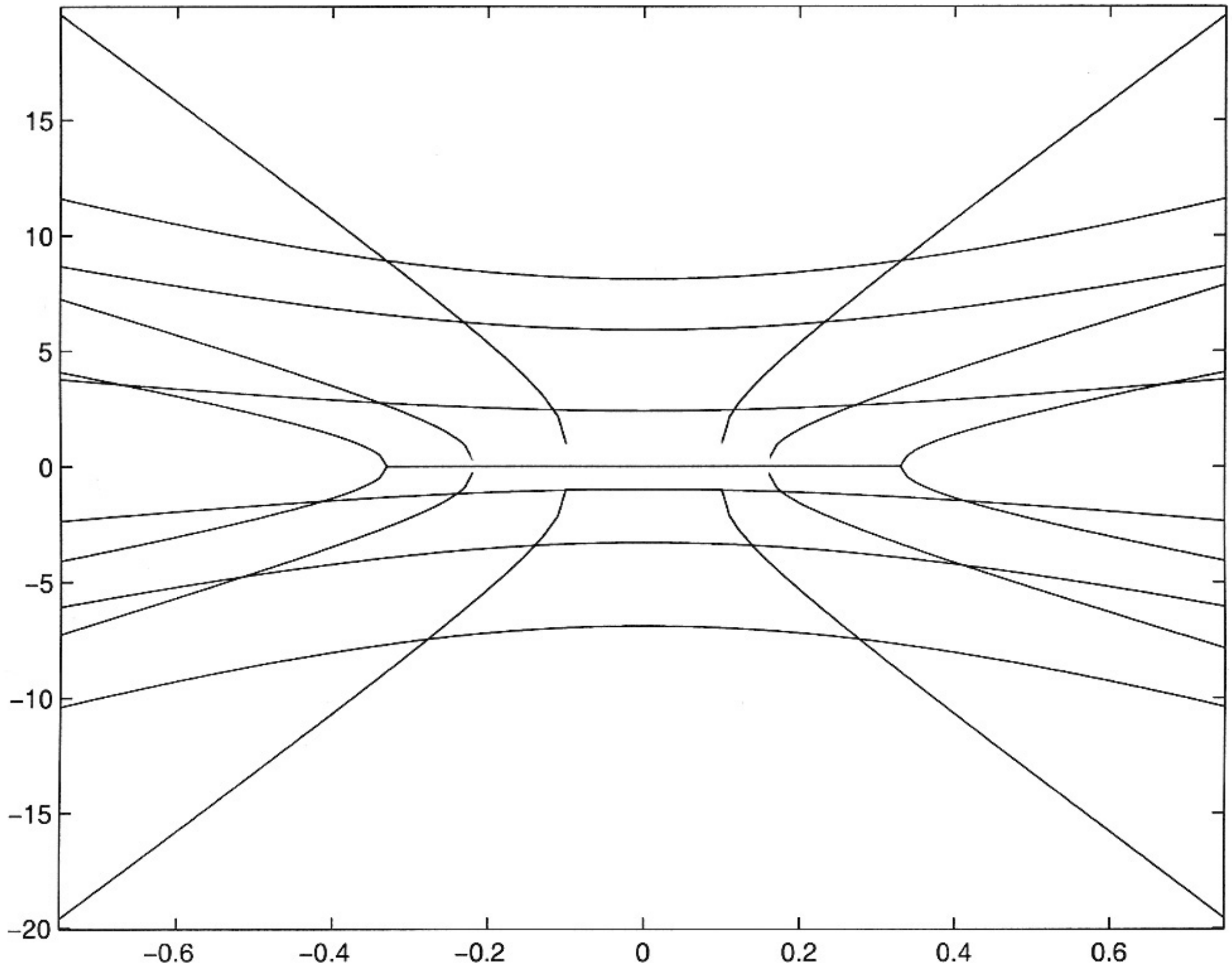
```
x = (-1.5:.01:1.5);

%Blue
a = .6;b = 4.2;
m = 0;j = 0;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);

%Green
a = .5;b = 6;
m = 0;j = 0;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);

%Red
a = .5;b = 2;
m = 0;j = 0;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);

%Yellow
a = .1;b = 1.5;
m = 0;j = 1;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;

%Black
a = .18;b = 1.3;
m = 0;j = 0;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;

%Cyan
a = .4;b = 2;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;

figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', ↙
x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, 'k-', x, y6r, 'c-', x, y6l, 'c-');
```

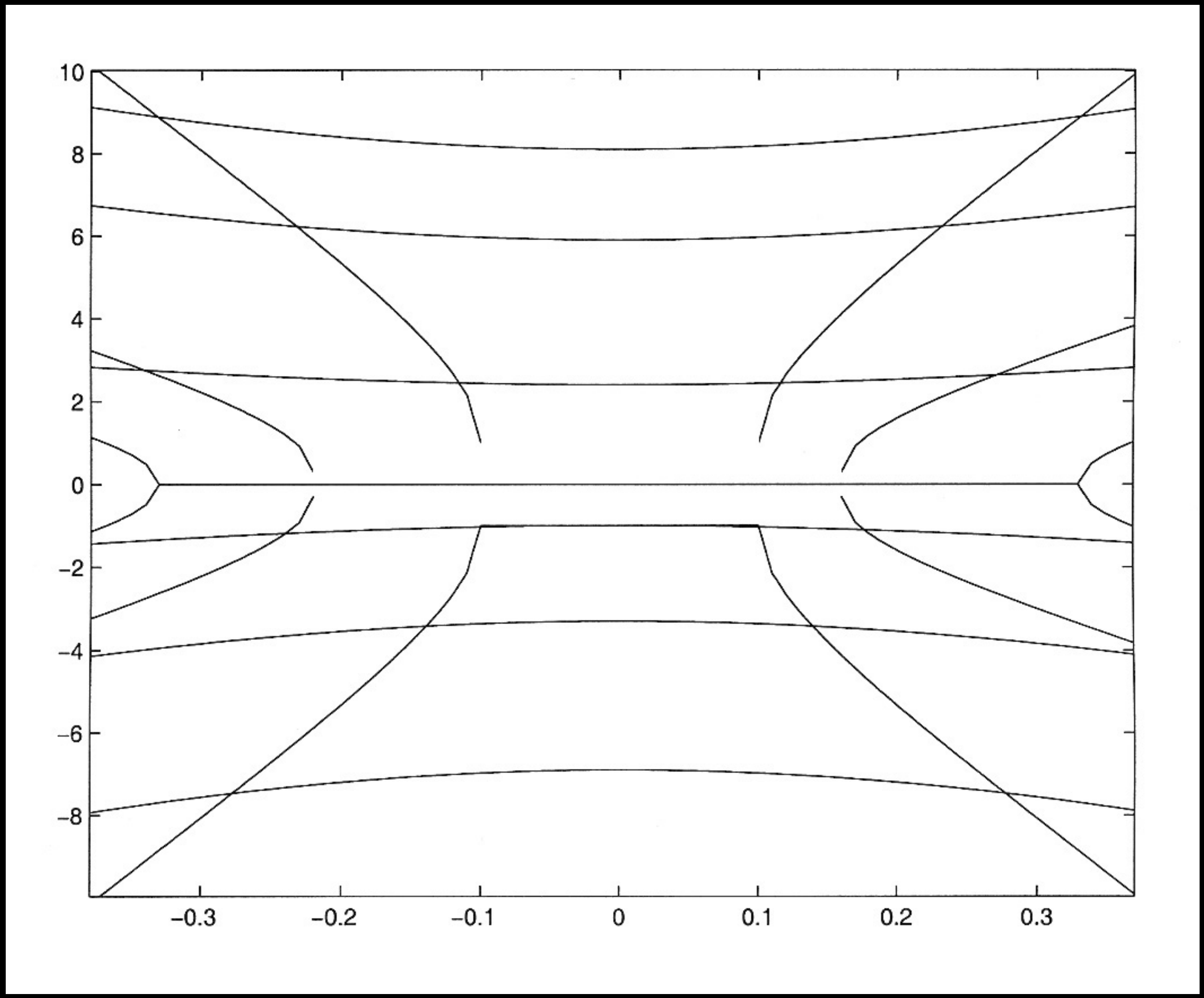


good, but needed to be off center

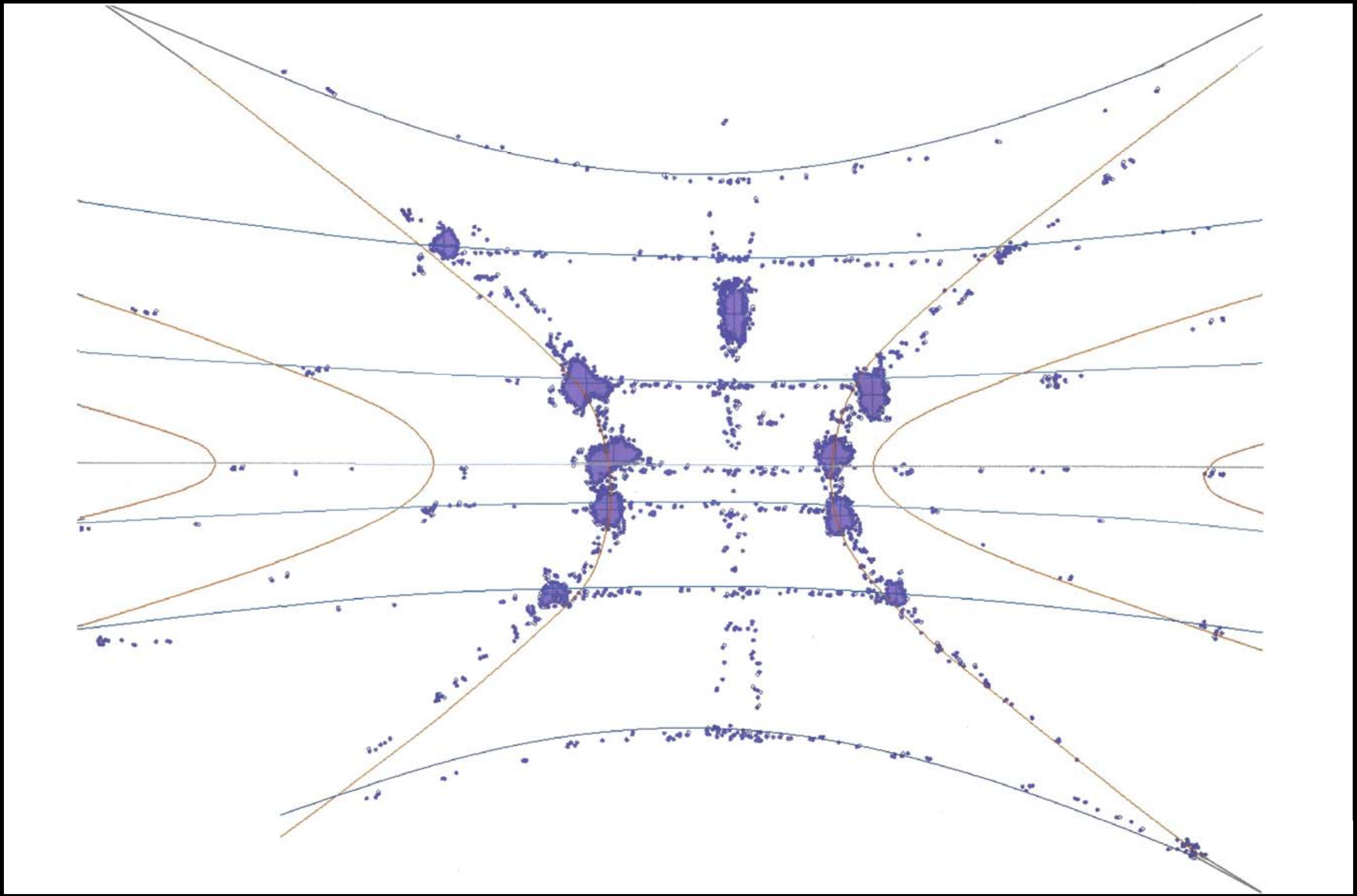
```
x = (-1.5:.01:1.5);

%Blue
a = .6;b = 4.6;
m = 0;j = 1.3;
y1t = j + b*sqrt((x - m).^2/a^2 + 1);
y1b = j - b*sqrt((x - m).^2/a^2 + 1);

%Green
a = .7;b = 7.5;
m = 0;j = .6;
y2t = j + b*sqrt((x - m).^2/a^2 + 1);
y2b = j - b*sqrt((x - m).^2/a^2 + 1);

%Red
a = .5;b = 1.7;
m = 0;j = .7;
y3t = j + b*sqrt((x - m).^2/a^2 + 1);
y3b = j - b*sqrt((x - m).^2/a^2 + 1);

%Yellow
a = .1;b = 2.5;
m = 0;j = 1;
y4l = j + b*sqrt((x - m).^2/a^2 - 1);
y4r = -y4l;

%Black
a = .19;b = 1.9;
m = -.03;j = .3;
y5l = j + b*sqrt((x - m).^2/a^2 - 1);
y5r = -y5l;

%Cyan
a = .33;b = 2;
m = 0;j = 0;
y6l = j + b*sqrt((x - m).^2/a^2 - 1);
y6r = -y6l;

figure(2);
plot(x, y1t, 'b-', x, y1b, 'b-', x, y2t, 'g-', x, y2b, 'g-', x, y3t, 'r-', x, y3b, 'r-', ↙
x, y4l, 'y-', x, y4r, 'y-', x, y5l, 'k-', x, y5r, 'k-', x, y6r, 'c-', x, y6l, 'c-');
```

final

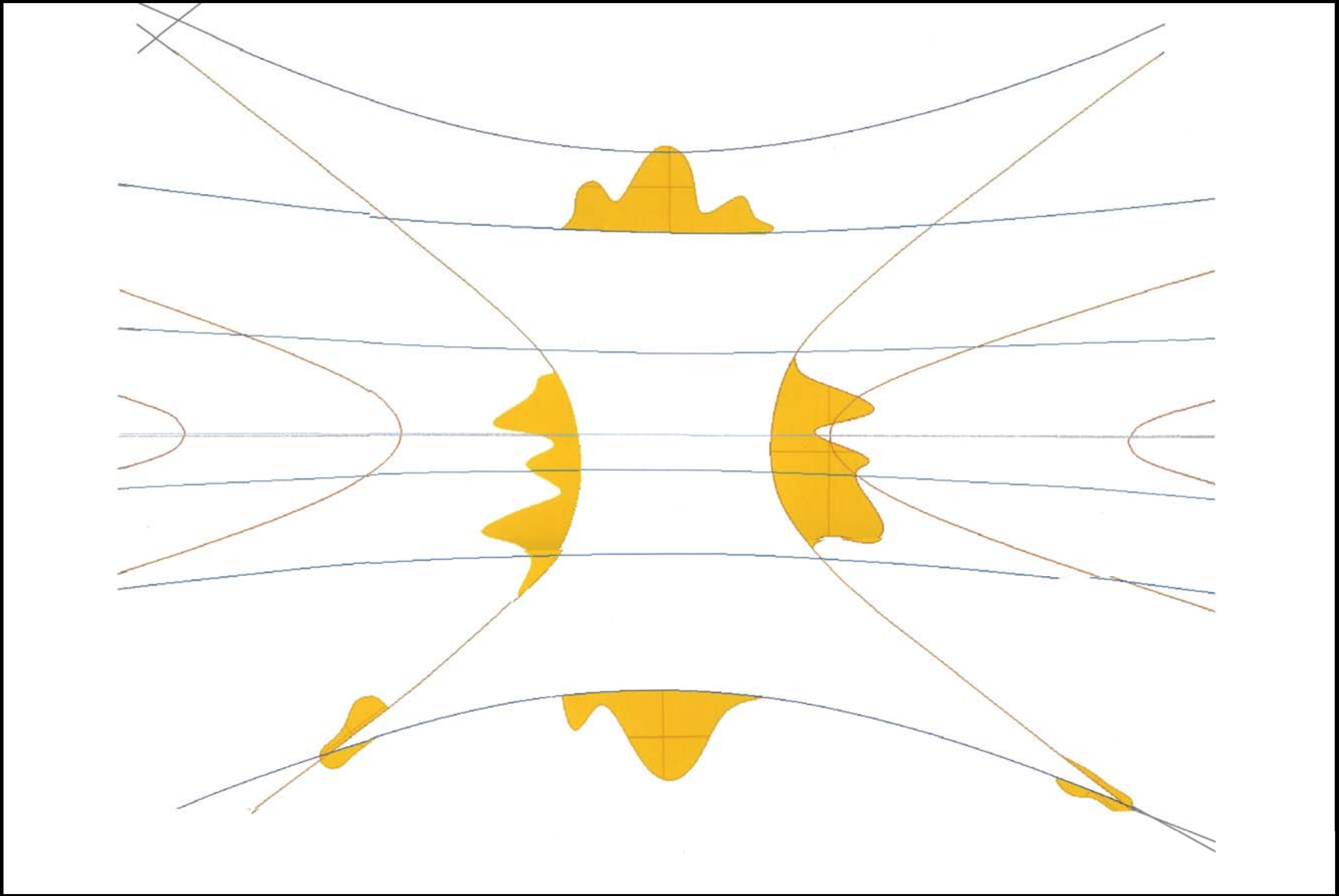

15
10
5
0
−5
−10
−15
−20
−0.6
−0.4
−0.2
0
0.2
0.4
0.6



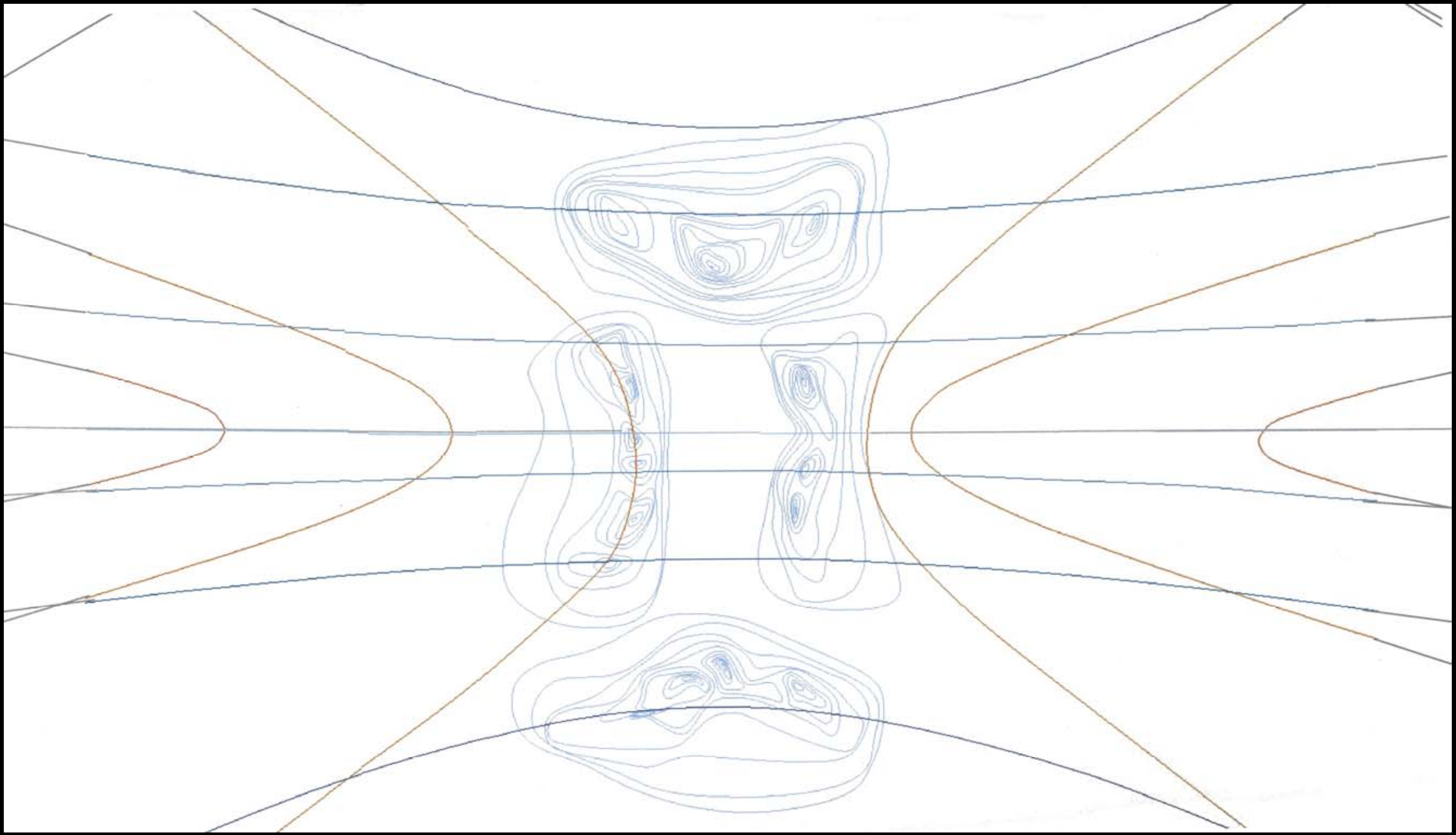
zoomed in



mapping the particle over my new grid (pedestrian clusters)

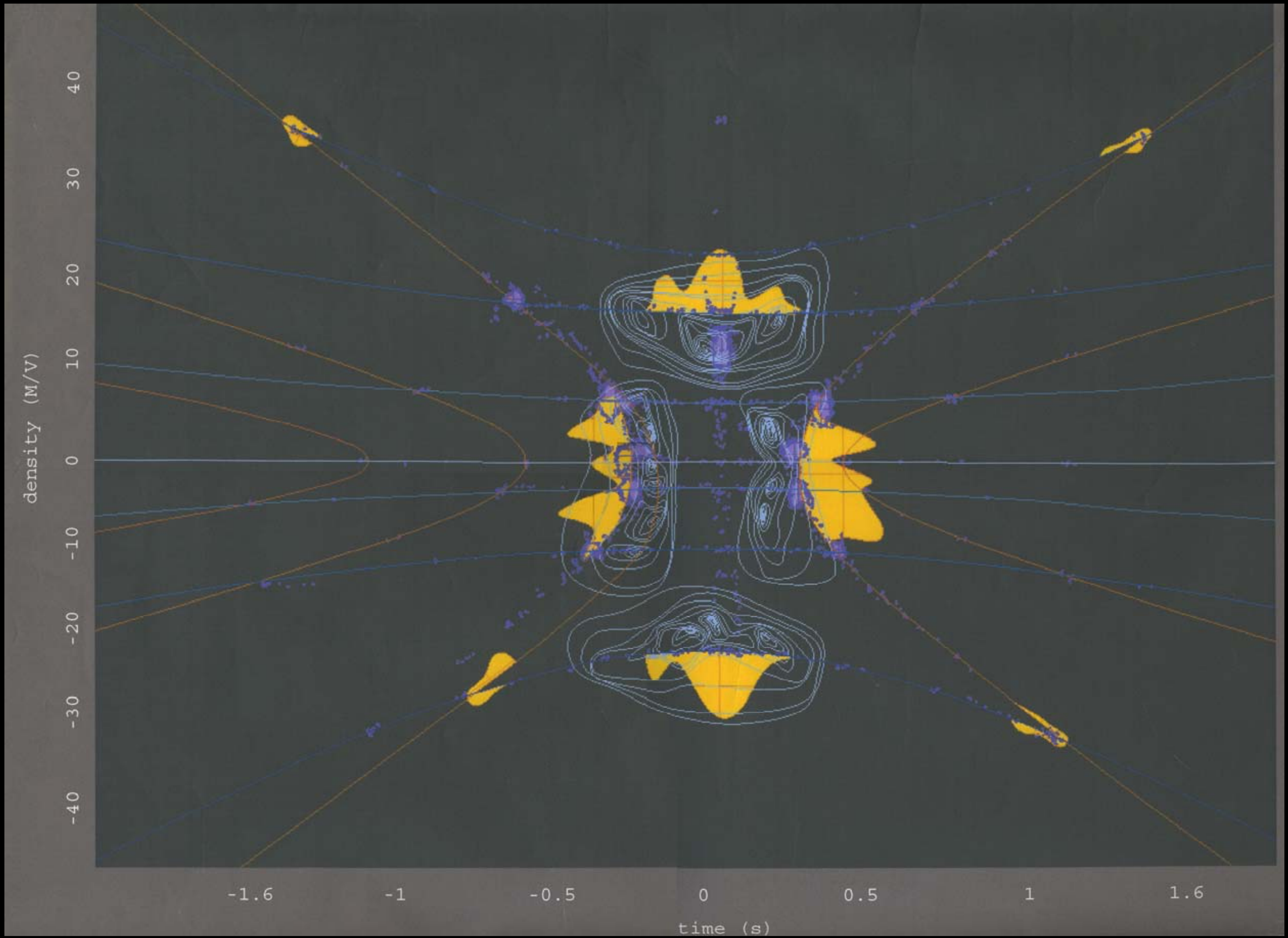


mapping the residual void space behind billboards

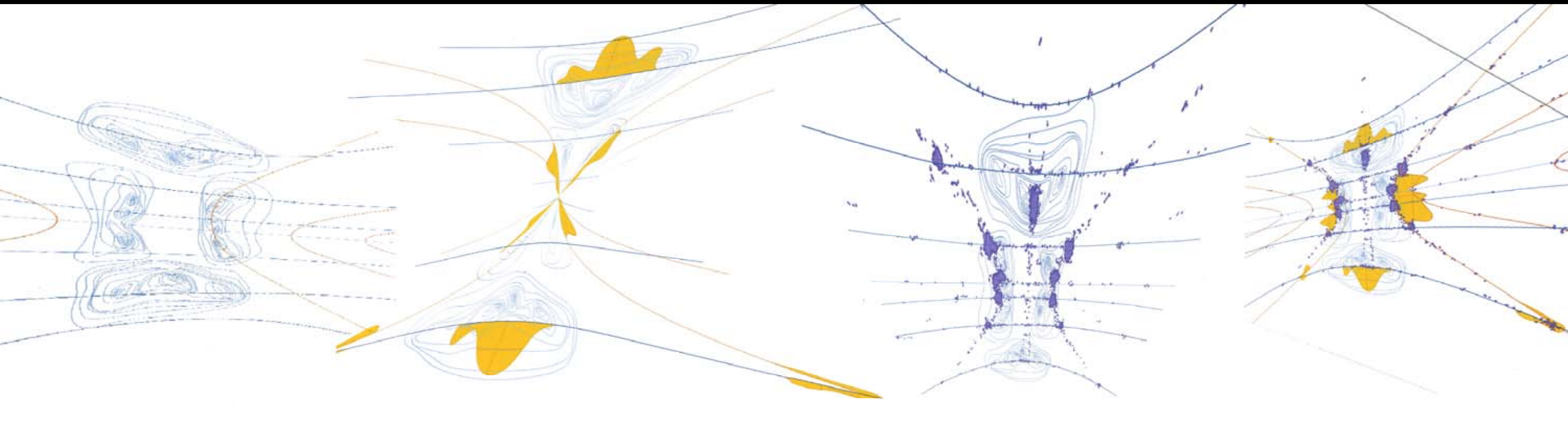


mapping the visual stimulation projected by billboards

Flux: the rate of transfer of fluid, particles, or energy across a given surface



Residual voids, population densities, and visual stimulation as documented on the site have been mapped over this hyperbolic background according to their densities, location, and distance from the vertical center line of the grid. When analyzed, the end quantitative measurement of the chart is flux (density/time). In this case, flux represents the aptitude for change in a particular area.



morphing the grids to find reaction to external forces on the system…