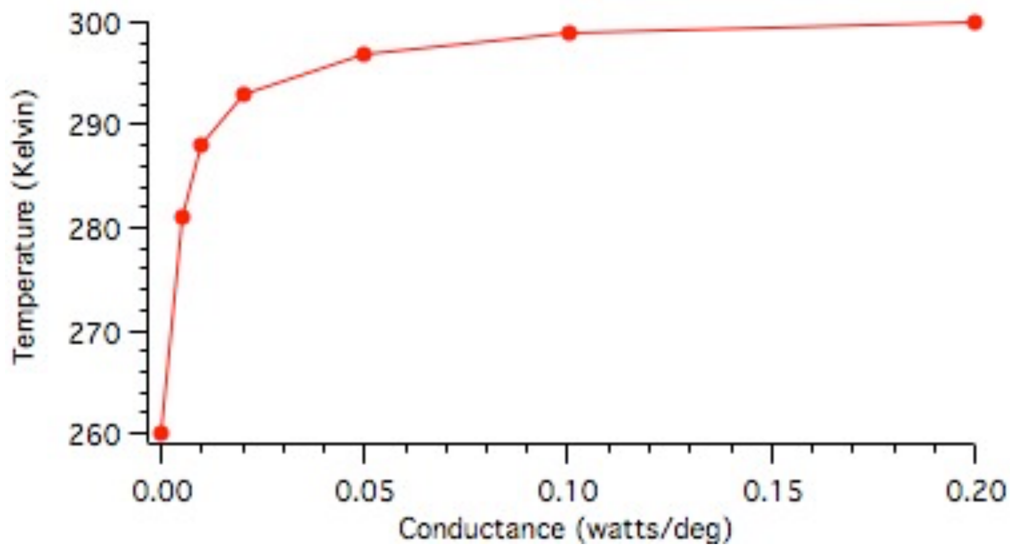
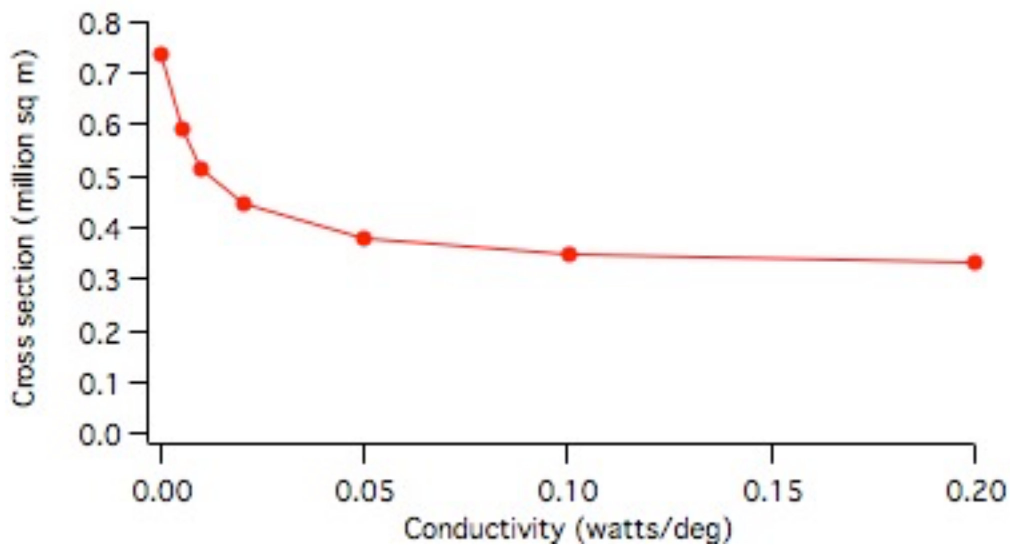
Mount Conductance

Case 1:
Cavity 303 Kelvin, emissivity .05
Rings 303 Kelvin, emissivity .9
1.0 inch uncoated cube
Dihedral angle +1.25 arcsec

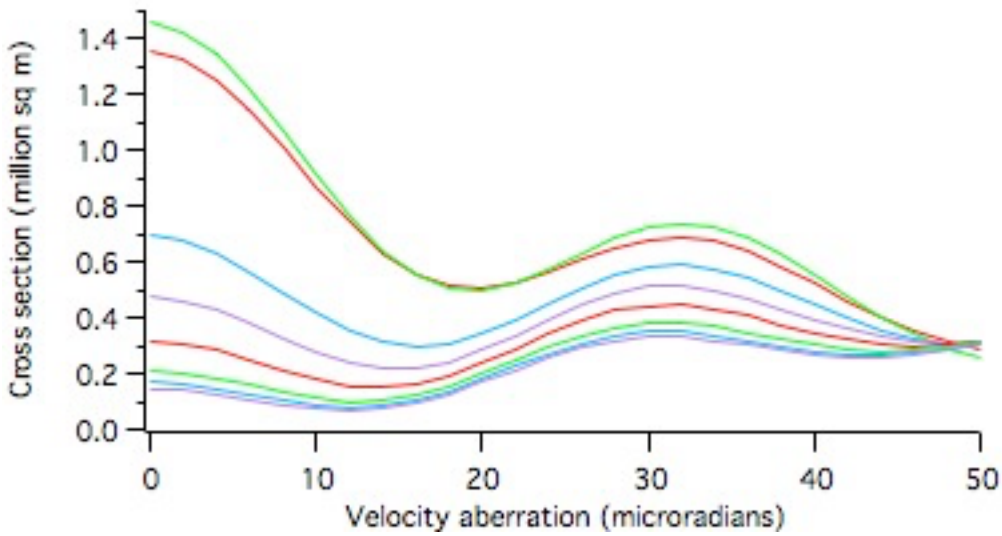
Temperature vs Conductance



Cross section vs conductance



Cross section vs velocity aberration for various conductance

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From the top
Isothermal red

Cond. color

.000  green
.005  blue
.010  purple
.020  red
.050  green
.100  blue
.200  purple
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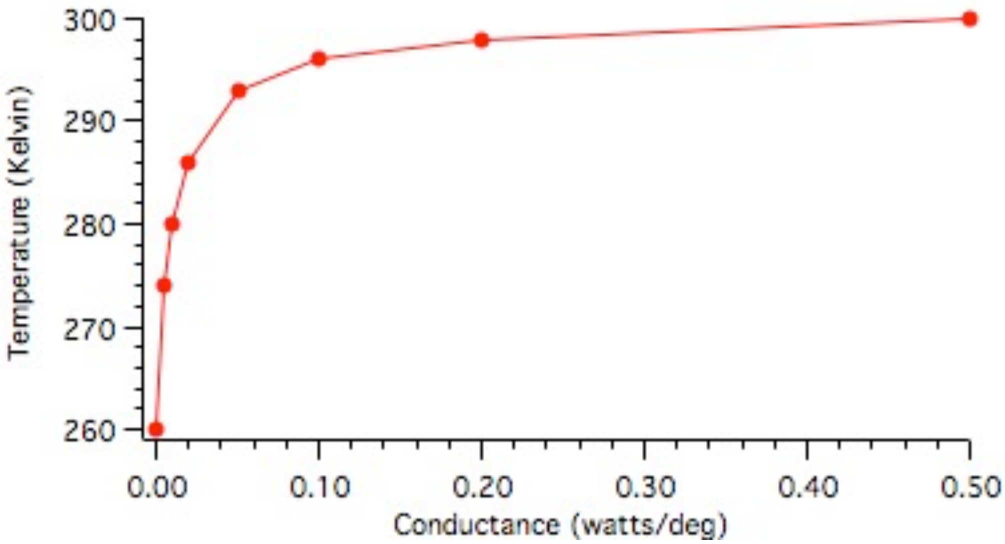
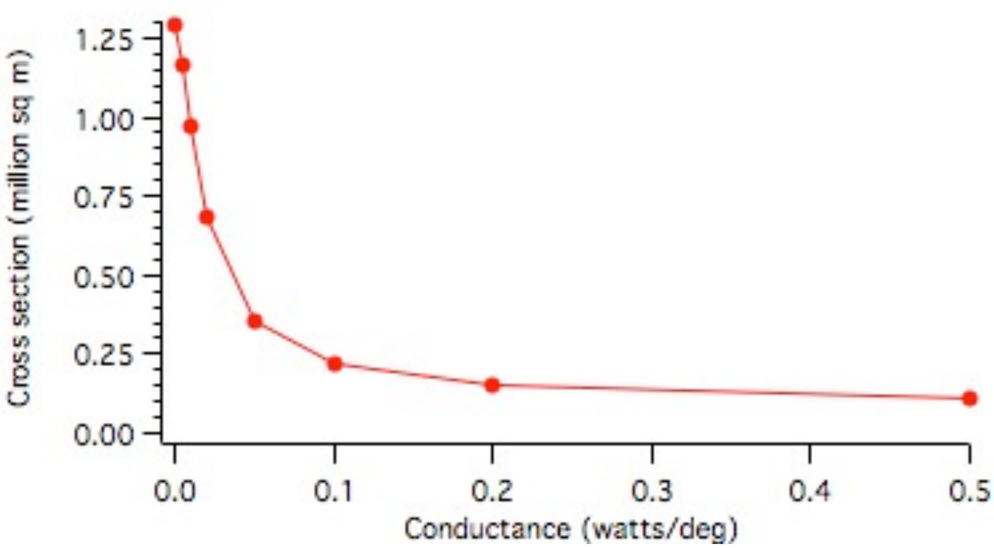
Case 2:
Cavity 303 Kelvin, emissivity .05
Rings 303 Kelvin, emissivity .9
1.5 inch uncoated cube
Dihedral angle +1.25

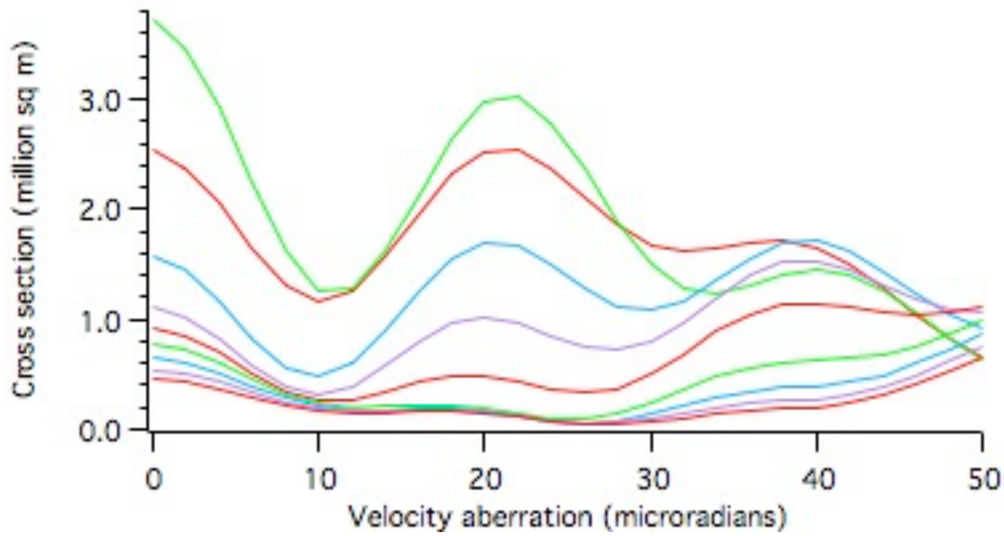
Temperature vs conductance



Cross section vs conductance



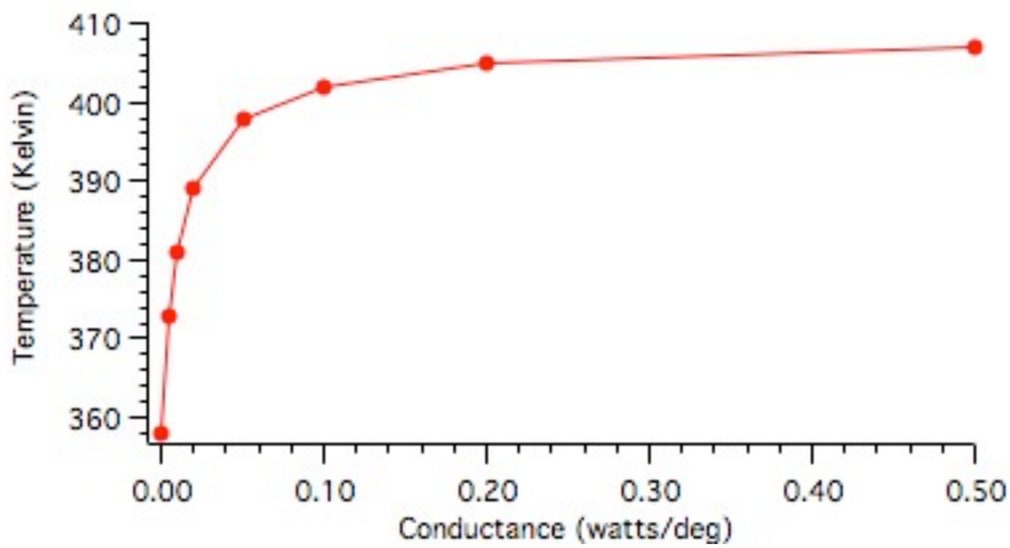
Cross section vs velocity aberration for various conductance



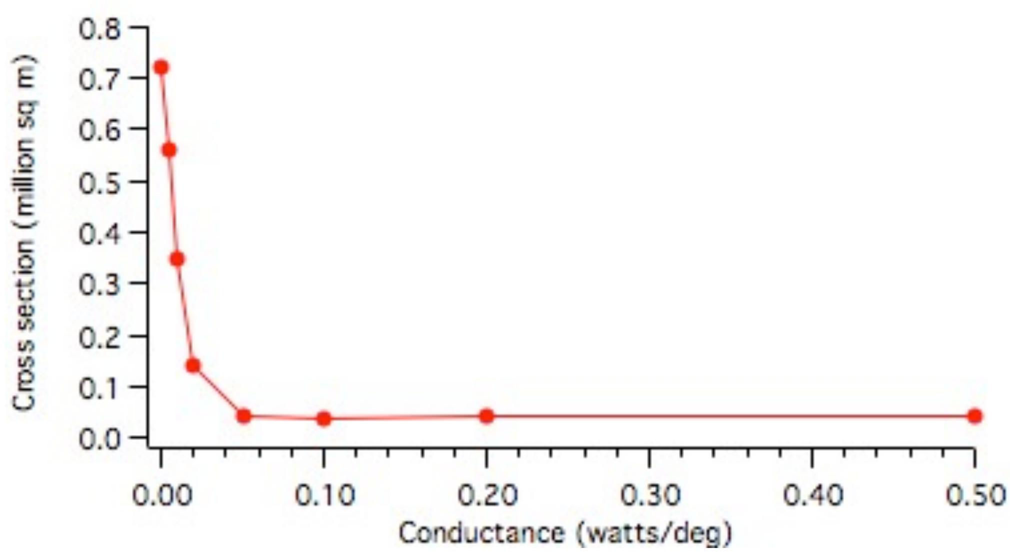

```
From the top
Isothermal red

Cond. color

.000  green
.005  blue
.010  purple
.020  red
.050  green
.100  blue
.200  purple
.500  red
```

Case 3:
Cavity 413 Kelvin, emissivity .07
Rings 413 Kelvin, emissivity .9
1.0 inch uncoated cube
Dihedral angle +1.25 arcsec

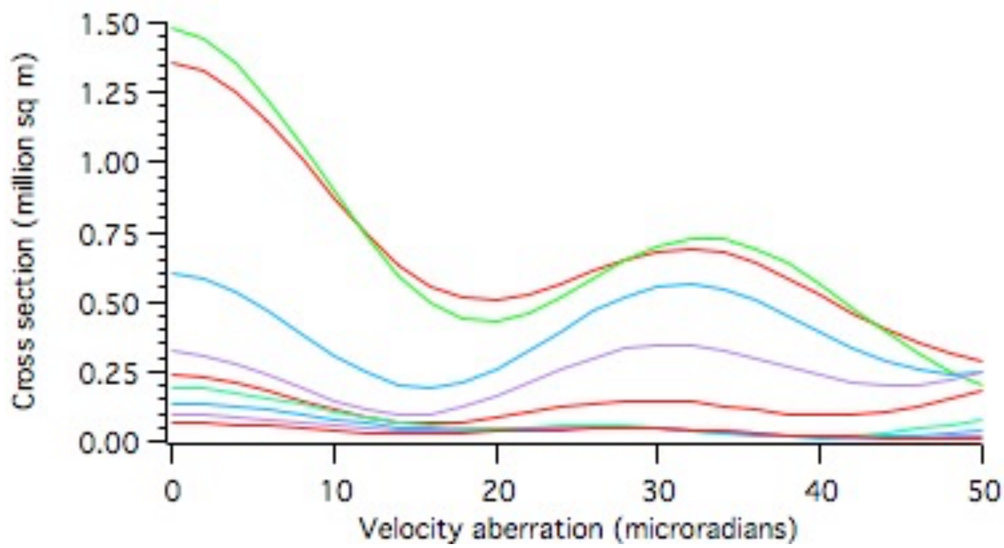
Cube temperature vs conductance



Cross section vs conductance



Cross section vs velocity aberration for various conductance



From the top
Isothermal red

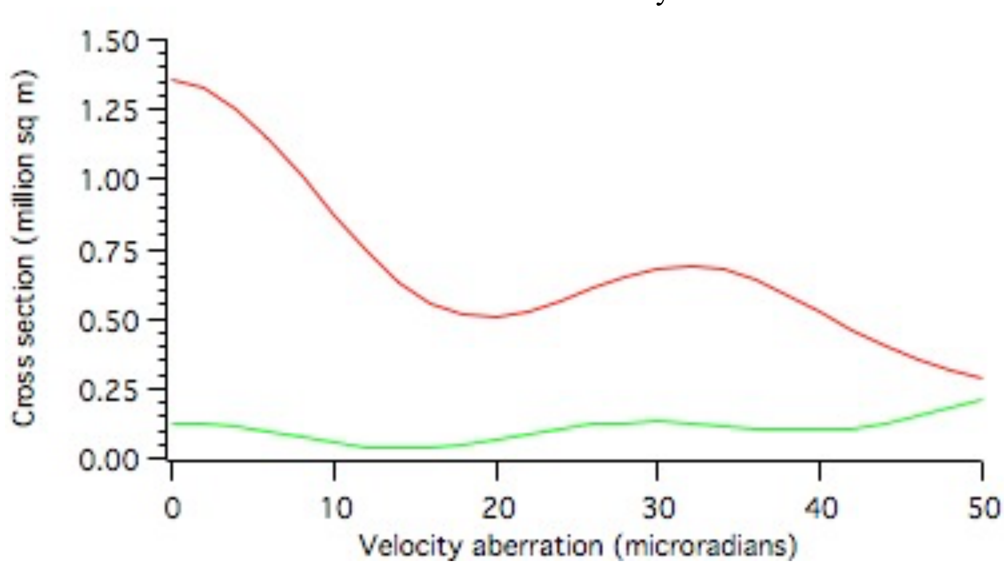
Cond. color

.000 green
.005 blue
.010 purple
.020 red
.050 green
.100 blue
.200 purple
.500 red

Case 4:
Cavity 413 Kelvin, emissivity .07
Rings emissivity .9
1.0 inch uncoated cube
Dihedral angle +1.25 arcsec
Antonio calculations Italy
Very high conductance

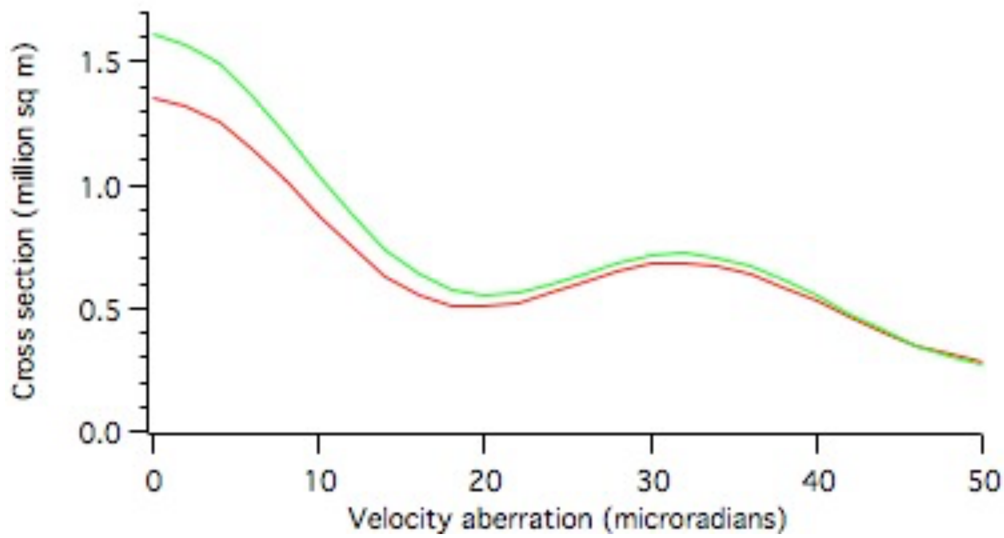
Cube Temperature 390 deg Kelvin

Cross section vs velocity aberration

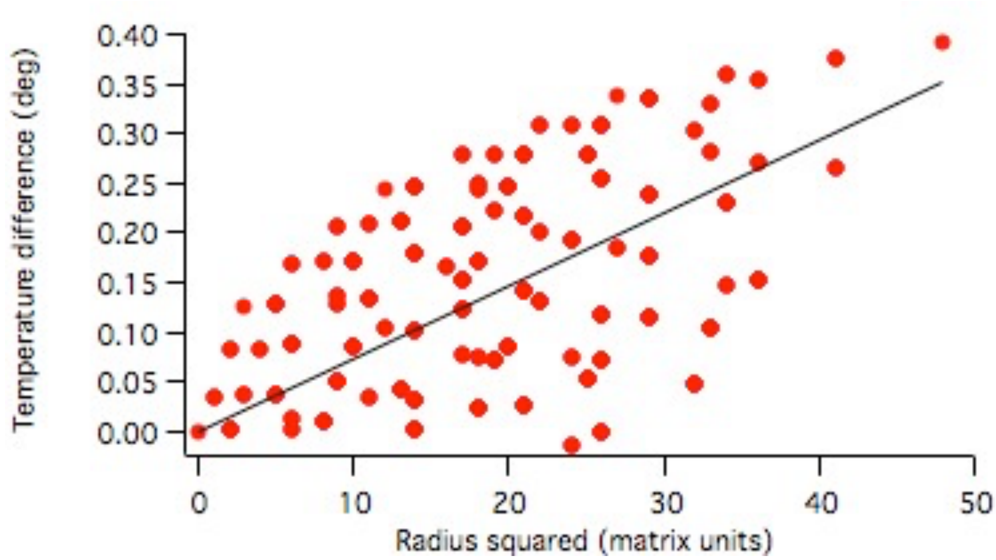


Isothermal red
Thermal green

Case 5:
Cavity 303 Kelvin, emissivity .05
No rings
1.0 inch uncoated cube
Dihedral angle +1.25 arcsec



Isothermal red
With cavity emissivity .05 Green

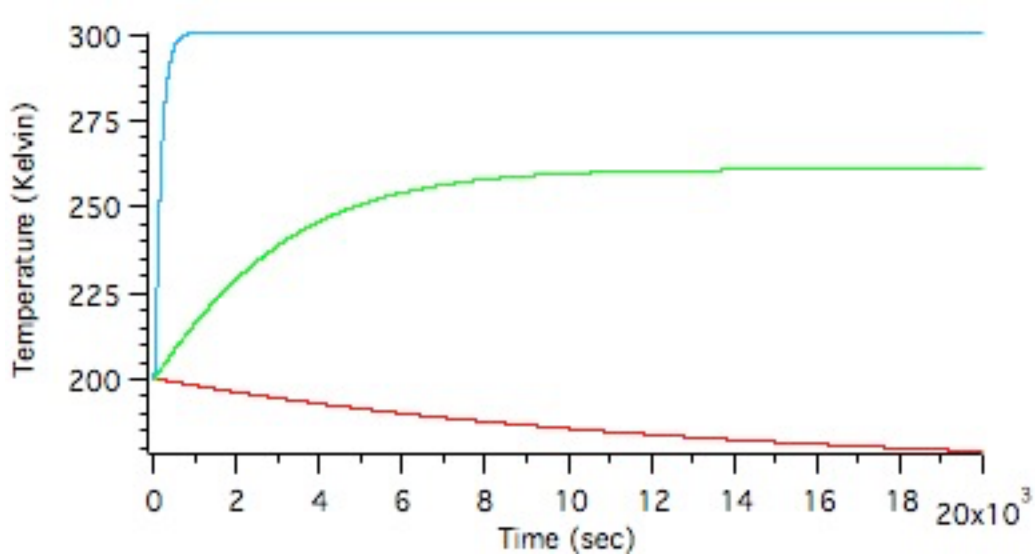


Plot of temperature vs the square of the distance from the center of the front face. The coordinates of the vertex are (1,1,1) in matrix units. The center of the front face is at (5,5,5). The length of the symmetry axis is $4\sqrt{3}$ = 6.928. The square of the length is 16 x 3 = 48. The black line is the best fit to the residuals. The rms deviation = 0.08991.

Case 6:
Time constants
1.0 inch uncoated cube
Dihedral angle +1.25 arcsec

Cavity 303 Kelvin, emissivity .05
Red - No rings, Case 5

Rings, 303 Kelvin, emissivity .9
Green - Case 1, conductance .000 watts/deg
Blue - Case 1, conductance .200 watts/deg



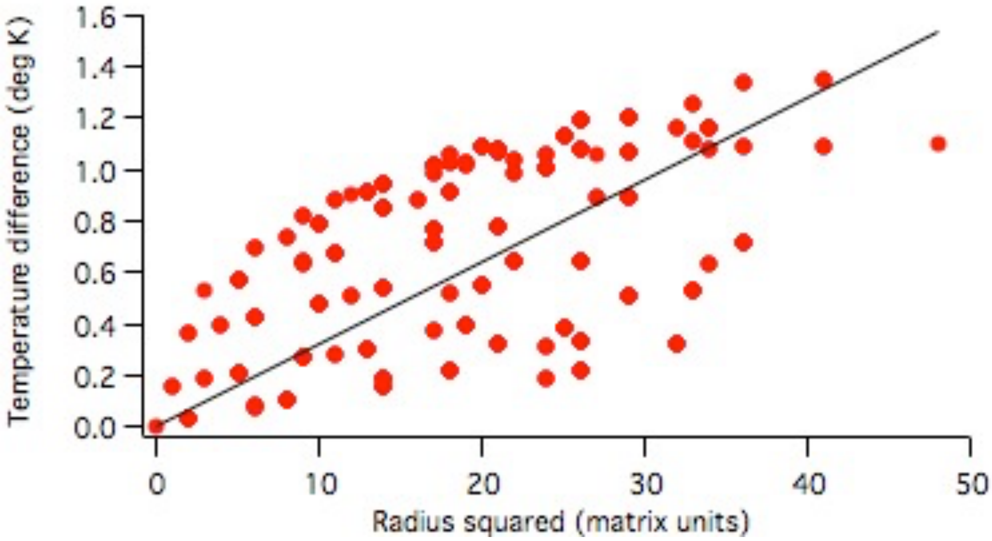
No rings	red
Rings, conductance .000	Green
Rings, conductance .200	Blue

Red. With no retaining rings the only heat input is from the cavity with an emissivity of .05. The time constant for the change in temperature of the cube is very long. There is very little effect on the cross section as seen in case 5

Green. With the retaining rings the heat input is significantly larger. The time constant is shorter. The temperature of the cube is significantly higher.

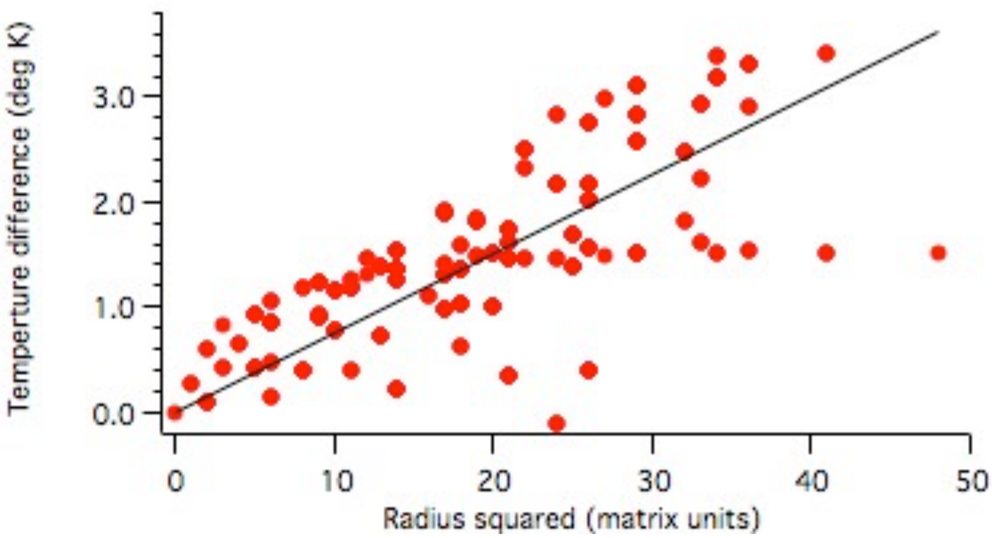
Blue. With the retaining rings and a conductance of .200 watts/deg the rise time is very fast comparatively. The final temperature is close to that of the retaining rings.

Case 6 Green curve



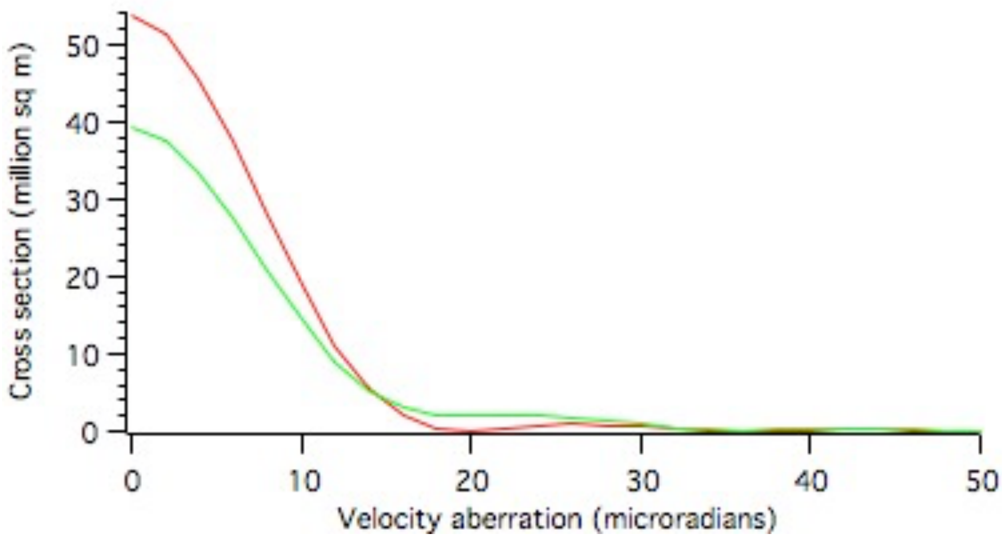
rms variation of the temperature = 0.33433

Case 6 Blue curve

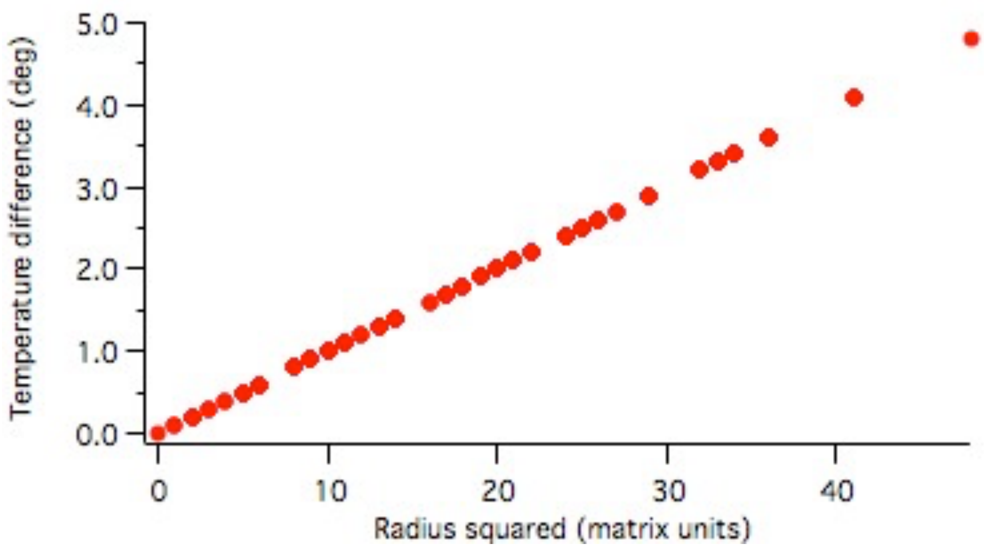


rms variation of the temperature = 0.57774

Case 7:
1.5 inch coated cube
No dihedral angle offset
Isothermal & Quadratic temperature distribution



Red = isothermal pattern
Green = numerical calculation with the quadratic distribution below.



Temperature proportional to the square of the distance from the center of the front face. The pattern computed with the temperature distribution above give the same pattern as with an isothermal pattern. If the ray tracing is done analytically the pattern is the same as the isothermal pattern. If the ray tracing is done numerically using the points plotted above the is numerical error that reduces the cross section at the center of the pattern and increases the cross section at around 20 microradians. However, the pattern is still close to the perfect pattern even though there are temperature differences of over 4 degrees.