

## The Hermann Grid

When you look at the Hermann Grid, you should see dark spots where the white lines cross (or, if the image is inverted, light spots where the black lines cross).

You can increase and decrease the size of the squares with the Increase Square Size and Decrease Square Size menu commands. You can increase and decrease the thickness of the grid lines with the Increase Line Width and Decrease Line Width menu commands. You can invert the image with the Invert menu command.

The Hermann Grid illusion demonstrates the effect of some simple image processing occurring at the retina. The incoming image is filtered by the center-surround operator of the retina (similar to a Laplacian or Difference-Of-Gaussians operator). If the receptive field of the operator is larger than the grid line width, spots will appear where the grid lines cross. You can observe the effect of the size of the receptive field relative to the grid line width by increasing the line width until the effect just disappears in the center of vision; if your monitor is large enough, you should still see the effect in the periphery of your vision. This is because the size of the receptive fields of the center-surround operators in the retina increase with distance from the fovea. Use the Apply DoG menu command to apply a 7-by-7 Difference-of-Gaussians operator to the image; this will show the effect of the center-surround operators of the retina.

## References

Ehrenstein, W. (1941). Modification of the brightness phenomenon of L. Hermann. In S. Petry & G.E. Meyer (Ed.), *The Perception of Illusory Contours* (pp. 35-39). New York: Springer-Verlag.