

## **Readings in Neuroinformatics**

Slaven Cvijetic, 14.12.2018

Contrast Sensitivity of the Retinal Ganglion Cells in the Cat, Christina Enroth-Cuggel and J.G. Robson, J. Physiol. (1966), 187, pp. 517-552.

### **Abstract**

Retinal ganglion cells receive the final input from the photoreceptors and transduce their output for higher brain areas involved in visual processing. Retinal ganglion cells are also known to perform pre-elementary image processing. Previous experiments on animal models cannot account for inhibitory retinal interactions in humans. To bridge this gap, we applied a recent technique on the cat animal model. The cats were anaesthetized and exposed to a grating stimulus with different contrasts while the response of retinal ganglion cells was recorded. Two types of cells were identified: the approximately linear X-cells and nonlinear Y-cells which also show a bigger receptive field than those of X-cells. Y-cells respond to changes in light distribution. The contrast sensitivity function of X-cells can very well be modelled with a difference of Gaussians while for Y-cells, one can either change the mean impulse density and a modulation of the impulse density predominantly at the drift frequency of the stimulus. These results provide deeper insight into the nature of human vision.