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**Kai-Bin Fu\*** ([kaibin@tamu.edu](mailto:kaibin@tamu.edu)), Department of Mathematics, TAMU 3368, Texas A&M University, College Station, TX 77843. *The modeling of retinal ganglion cell (RGC) axons and its convexity properties*. Preliminary report.

Glaucoma is a group of diseases that can lead to damage of the eye's optic nerve and loss of vision. Most of these diseases are characterized by increased fluid pressure inside the eye. When the pressure increases, the retinal ganglion cell (RGC) axons are deformed, leading to the death of RGC axons which eventually results in the loss of vision.

We will present a model to examine the elongation of RGC axons. The analysis is based on the steady state theory for simple fluid which is in the literature. We obtained the velocity distribution of axons movement as well as the pressure distribution which is consistent with clinical experience. With the help of experimental data, we propose the constitutive relation for RGC axons.

We have also examined some mathematical features, namely convexity properties, of existing constitutive relation, for example the classical Fung model. We discuss the corresponding implications for the constitutive modeling. (Received September 15, 2008)