Texas Tech University. Applied Mathematics Seminar.

# Motion Encoding in Turtle Retina

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**ABSTRACT.** Cellular level models of neural circuits provide an understanding of the complex neurological phenomena, such as vision. Encoding visual inputs in the visual system of an animal depends on the cellular level properties as well as cell distribution and interconnections in multiple stages. The Retina provides the sensory inputs to the deeper parts of the visual system. Turtle retina is different from humans in cell types and the distribution. The turtle retina has cells which are sensitive to motion direction in addition light intensity. The cells are distributed in such a way that highest cell density occurs along a line called the visual streak. In this talk I wish to present our work on developing a model retinal patch of a turtle retina and an analysis of encodability/decodability on the model retinal patch. The individual cells are modeled as a two stage hybrid model. These model cells are distributed on the model retinal patch according to the actual cell distributions. The encodability and decodability analysis is conducted assuming the population response is a stochastic process.