Mathematical Modelling of the Portion of the Brain that Governs Circadian Rhythm

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102 Bradley Hall, 4:00 pm
(Tea 3:30 pm Math Lounge)

Abstract

The area of the brain that governs Circadian Rhythm is a small set of neurons (16000) in the brain stem. The neurons are considered in the bulk of the literature to be identical but the network properties are unknown. A model consisting of 16000 coupled van der Pol differential equations is used as the model. This model follows the work of Kronour (retired) at Harvard University. Various network topologies were considered and using various concepts of nearest neighbor it was found that the model worked well in terms of entrainment and in terms of phase lock. This model and some of its implications will be discussed in the seminar.

This talk should be accessible to undergraduates.

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