

ACMS Applied Math Seminar

Leonid Rubchinsky

Thursday, May 5

154 Hurley Hall

3:30- 4:30 PM



Intermittent Synchronization In Neuroscience: From Theory To Applications in Parkinson's Disease and Drug Addiction

Synchronization of neural activity in the brain is involved in a variety of brain functions including perception, cognition, memory, and motor behavior. Excessively strong, weak, or otherwise improperly organized patterns of synchronous oscillatory activity appear to contribute to the generation of symptoms of different neurological and psychiatric diseases. However, neuronal synchrony is frequently not perfect, but rather exhibits intermittent dynamics. So the same synchrony strength maybe achieved with markedly different temporal patterns of activity (roughly speaking oscillations may go out of the synchronous state for many short episodes or few long episodes). I will discuss this situation from two perspectives: the phase-space perspective and associated considerations of dynamical systems theory and time-series analysis perspective. I will then proceed with the application of this analysis to the neural activity in Parkinson's disease and in drug addiction disorders.

The Department of Applied and Computational
Mathematics and Statistics

Please visit acms.nd.edu to view the full list of speakers.