Biomath Forum

Interdisciplinary research unifying mathematical modelling, qualitative analysis and experimental investigation in biosciences with the ultimate aim of elucidating the underlying biological processes

Biomath Forum Lecture Series Time Venue

Date Tuesday, 12 November 2019

13:30 Plant Sciences Auditorium

Dynamical systems perspective in neuroscience historical and current approaches

Péter Érdi

Center for Complex Systems Studies Department of Physics and Department of Psychology Kalamazoo College, Kalamazoo, MI, USA

Abstract: We discuss the concept of hierarchical dynamical systems of which the brain is a prototype. In this framework we review both deterministic and stochastic single neuron models and discuss the scope and limits of dynamical networks of neurons, called the attractor networks, in neural computations. We argue that a large class of neurological and psychiatric disorders can be understood as dynamical diseases. Specifically, we show that a chemical kinetics model can help

us to uncover some hidden links between epilepsy and Alzheimer's Disease.

BIO: Dr. Péter Érdi serves as the Henry R. Luce Professor of Complex Systems Studies at Kalamazoo College. He is also a research professor in his home town, Budapest, at the Wigner Research Centre of Physics of the Hungarian Academy of Sciences. Péter is a Member of the Board of Governors of the International Neural Network Society, and the Editor-in-Chief of Cognitive Systems Research.



UNIVERSITEIT VAN PRETORIA UNIVERSITY OF PRETORIA YUNIBESITHI YA PRETORIA http://people.kzoo.edu/~perdi/

Contact person:

Prof. Jacek Banasiak (jacek.banasiak@up.ac.za) SARChI Chair: Mathematical Models in Methods in Bioengineering and Biosciences

Computational Neurology and Psychiatry

