

**Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research**

The Swiss Institute for Dryland Environmental and Energy Research
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**Cellular function given parametric variation:
*the case of membrane excitability***

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Abstract:

How is reliable physiological function maintained in cells despite considerable variability in the values of key parameters of multiple interacting processes that govern that function? I will describe a possible approach to the problem, through analysis of the classic Hodgkin-Huxley formulation of membrane action potential. Although the full Hodgkin-Huxley model is very sensitive to fluctuations that independently occur in its many parameters, the outcome is in fact determined by simple combinations of these parameters along two physiological dimensions: *Structural* and *Kinetic* (denoted S and K). The impacts of parametric fluctuations on the dynamics of the system — seemingly complex in the high dimensional representation of the Hodgkin-Huxley model — are tractable when examined within the S - K plane. Experimental validation of the resulting phase diagram is offered, using a bio-synthetic system.

Date & Location:

Tuesday, April 2, 2019, 11:00

Lecture room, Physics Building (ground floor)

