

SEMINAR - סמינר

הנך מוזמנת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 6.04.2017 (י' בניסן, תשע"ז), בבניין דן קאהן, חדר 217 (קומה 2), 14:30.

ירצה:

Prof. Michael Rosenblum
Department of Physics and Astronomy
Potsdam University
Germany

על הנושא:

Reconstructing oscillator networks from observations

The seminar will be given in English

להלן תקציר ההרצאה:

We present an approach for recovery of the directional connectivity of a small oscillator network by means of the phase dynamics reconstruction from multivariate time series data. The main idea is to perform an invariant reconstruction, so that the obtained models independent of the used observables. This is achieved with the help of a transformation from the initial phase estimate, called protophase, to the true phase. We illustrate this approach by analysis of cardio-respiratory interaction in humans. With this example we also show how the phase response curve of an oscillator can be obtained from a passive observation of its dynamics under free-running conditions, without a specially designed perturbation. We discuss possible applications for quantification of heart rate variability. Next, we demonstrate that using a triplet analysis instead of the traditional pairwise one, we are able to recover an effective phase connectivity of the network which is generally close but not equivalent to a structural one. We show that we achieve good separation between existing and non-existing connections, and thus reliably reproduce the network structure.

המארח: ד"ר מיכאל פלדמן

בברכה,

פרופ' אורנה שווארץ אוסובסקי
מרכז הסמינרים