

סמינר - SEMINAR

הנך מוזמנת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 17.12.2018 (ט' בטבת, תשע"ט), בבניין דן קאהן, אודיטוריום 1, 13:30.

מרצה:

Dr. Inbar Grinberg

Postdoctoral Researcher
University of Illinois at Urbana-Champaign

על הנושא:

TOPOLOGICAL PUMPING IN A MAGNETO-MECHANICAL SYSTEM

The seminar will be given in English

להלן תקציר ההרצאה:

Topological insulators are characterized by protected conductive states on surfaces or edges in an otherwise insulating bulk, and are especially appealing to different applications due to their robustness to defects. The implementation of topological insulators in both optical and acoustic coupled resonator systems has opened exciting paths towards new control over light and sound. A topological charge pump conveys quanta of charge across a gapped system while being robust against array disorder, external noise, and disorder in the pumping protocol, however an equivalent temporal topological pump has yet to be demonstrated.

In this work, we demonstrate that a 1D classical system that is adiabatically spatio-temporally modulated can produce an analog to a topological charge pump in a classical system. Our experimental demonstration consists of an array of magneto-mechanical resonators, where the inter-resonator coupling rates are controlled by the distance over which the magnetic interaction takes place. We modulate both the coupling rates and the on-site potentials using a mechanical apparatus, and demonstrate that mechanical energy can be pumped from one edge mode of the array to the other edge mode while the system remains gapped. We show that this 1D array is the equivalent of a 2D Chern insulator in one real dimension and one synthetic dimension.

Bios: Inbar (Hotzen) Grinberg received the B.Sc. and Ph.D. degrees from the Faculty of Mechanical Engineering, Technion—Israel Institute of Technology, in 2008 and 2017, respectively. Since February 2017 she is holding a post-doctoral position at the Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, at the Bahl research lab. Her research experience includes design, simulations, and fabrication of MEMS actuators. Currently her research focuses on topological insulators mechanical metamaterials and dynamics of coupled resonator arrays.

מאת: פרופ' דוד אילתה

בברכה,

ד"ר איתן סאס

מרכז הסמינרים