



The Department of Physics at Bar Ilan University
is pleased to invite you to two lectures by our special guest :



Prof. Benjamin Lev

Departments of Applied Physics and Physics

Stanford University

Sunday, January 25, 2:00pm – Reznik (Building 209), Room 210

Special Seminar

“Beyond mean-field physics with multimode cavity QED”

Investigations of many-body physics in an AMO context often employ a static optical lattice to create a periodic potential. Such systems, while capable of exploring, e.g., the Hubbard model, lack the fully emergent crystalline order found in solid state systems whose stiffness is not imposed externally, but arises dynamically. We will discuss our multimode cavity QED experiment to explore the spontaneous continuous symmetry breaking observed in compliant crystallization, providing an environment to observe effects pertinent to soft condensed matter systems including frustration and liquid crystalline topological defects concomitant with superfluidity. Associative memory and spin-glasses also may form due to cavity-mediated long-range, oscillatory, and frustrated spin-spin interactions.

Monday, January 26, 10:30am, Physics (Building 202), Room 301

Colloquium

“The SQCRAMscope: Probing exotic materials with quantum gases”

Microscopy techniques co-opted from nonlinear optics and high energy physics have complemented solid-state probes in elucidating exotic order manifest in condensed matter materials. Up until now, however, no attempts have been made to use modern techniques of ultracold atomic physics to directly explore properties of strongly correlated or topologically protected materials. Our talk will present the SQCRAMscope, a novel Scanning Quantum Cryogenic Atom Microscope technique for imaging magnetic and electric fields near cryogenically cooled materials. With our SQCRAMscope, we aim to image inhomogeneous transport and domain percolation in technologically relevant materials whose order has evaded elucidation.

To schedule a meeting with the speaker: doodle.com/zk7cgrbtfrceq28

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More info: “LevLab Where Quantum Matters” – levlab.stanford.edu

