**Virtual Physics Division Lunch Seminar**

**Or Hen**

**Massachusetts Institute of Technology**

*The Transparent Nucleus: SRC and single nucleon knockout inverse kinematics measurements using a 48 GeV/c carbon beam*

**Abstract:**

From superconductors to atomic nuclei, dense strongly-interacting many-body systems are ubiquitous in physics. Measuring the ground-state distribution of particles in such systems is a formidable challenge that is often met by scattering experiments which try to reconstruct the initial distribution of knocked-out particles using energy and momentum conservation. However, quantum mechanics imposes a fundamental limitation on interpreting these measurements due to indistinguishable interference of initial- and final-state interactions.  In this talk I will present result from a recent study of the ground-state distribution of single nucleons and short-range correlated nucleon pairs in atomic nuclei by scattering 48 GeV/c Carbon-12 (12C) ions from hydrogen in quasi-free inverse kinematics and detecting two protons at large angles in coincidence with an intact Boron-11 (11B) nucleus.   All of the measured reactions are well described by theoretical calculations that exclude ISI/FSI; and thus, showcase a new ability to study the short-distance structure of short-lived radioactive atomic nuclei at the forthcoming FAIR and FRIB facilities.

**Friday, May 15, 2020**

**12:00pm**

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