

Massachusetts Institute of Technology  
Department of Physics

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**Condensed Matter Theory Journal Club**

" Non-equilibrium Metastable States of Mott Insulators: Perspectives  
and Speculation "

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**Abstract:** In a wide variety of narrow-gap Mott insulators, the metal-insulator transition has been observed as a function of applied electric field. So many Mott insulators have been observed with this property, that one may even label it "universal". This electric field can be applied in a conventional transport experiment or, in several materials, even with light. In certain cases, the collapse on the Mott state is metastable, lasting an indefinite amount of time. At present, the mechanism behind this collapse is poorly understood, but there have been experimental efforts pointing towards some form of phase separation on the nanoscale. In this talk, I intend to review the field as it currently stands, speculate on the origin of the metastable phases and, if time permits, show some rather interesting applications of the gap collapse for neuromorphic computing.

**12:00pm noon**  
**Tuesday, September 11, 2018**  
**Duboc Room (4-331)**

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Host: Debanjan Chowdhury