

Massachusetts Institute of Technology  
Department of Physics

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## Condensed Matter Theory Seminar

“Imaging current distributions near the metal to insulator transition in  
 $\text{LaAlO}_3/\text{SrTiO}_3$ ”

Eylon Persky, Naor Vardi, Beena Kalisky (Bar-Ilan)

**Collaborations:** Hwang group (Stanford), Caviglia group (Delft), Jonathan Ruchman (MIT)

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**Abstract:** Electronic properties at the interface between  $\text{LaAlO}_3$  and  $\text{SrTiO}_3$  are gate tunable. By tuning the carrier density using the gate, the interface undergoes a superconductor to insulator transition, and a metal to insulator transition.

We use scanning superconducting quantum interference device (SQUID) to track local changes to the conduction, near the metal to insulator transition. I will show that conduction landscape changes dramatically near the transition, and that the changes are governed by the crystal structure of the underlying substrate.

**12:00pm noon**  
**Wednesday, June 20, 2018**  
**Duboc Room (4-331)**

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Host: Jonathan Ruhman