

**Massachusetts Institute of Technology**  
**Department of Physics**

---

**Condensed Matter Theory Seminar**

"Odd-parity superconductivity near inversion breaking quantum critical point in one dimension"

**Jonathan Ruhman**, Massachusetts Institute of Technology

**Abstract:** In this talk I will discuss how an inversion-breaking quantum critical point affects the ground state of a one-dimensional electronic liquid with repulsive interaction and spin-orbit coupling. I will show that regardless of the interaction strength, the critical fluctuations always lead to a gap in the electronic spin-sector. The origin of the gap is a two-particle backscattering process, which becomes relevant due to renormalization of the Luttinger parameter near the critical point. The resulting spin-gapped state is a one-dimensional version of spin triplet superconductivity. Interestingly, in the case of a ferromagnetic critical point the Luttinger parameter is renormalized in the opposite manner, such that the backscattering process remains irrelevant and therefore the spin-sector remains gapless.

**12:00pm**  
**Tuesday, November 1, 2016**  
**Duboc Room (4-331)**