# Condensed Matter Theory Center Seminar

**Wednesday, February 16**
**11am-12pm**
**2205 Physics Building**

**All are welcome to attend.**

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## "Dissipative effects in a superconducting wire coupled to diffusive metals"

Narrow one-dimensional (1D) superconducting wires with diameter smaller than the bulk coherence length are systems in which order-parameter fluctuations destroy long-range order (LRO). While ideally isolated wires have been intensively studied in the past, the situation is less clear for 1D systems subject to environment-induced dissipation, at present under intensive experimental and theoretical research.

In this work, we show that a weak coupling to a diffusive metallic film can reinforce superconductivity in the wire through the quench of fluctuations. We obtain the critical points and phases of the system at T=0, and in particular, we predict a quantum phase transition towards a superconducting phase with LRO as a function of the wire's superconducting stiffness and coupling parameter to the metal. We also discuss implications for experiments.

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