

Massachusetts Institute of Technology
Department of Physics

CONDENSED MATTER THEORY SEMINAR

**“Superconducting Junctions on the Edge
of the Quantum Spin Hall Insulator”**

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Abstract: We discuss the properties of the superconducting junctions in NS and SNS geometries with the normal part being the edge state of the QSH insulator. We propose the setup for the formation of a chaotic quantum dot with a ballistic point contact on the edge. We discuss its connection to the observation of the zero-bias conductance peak in the NS geometry. We additionally show that the QSH edge opens the opportunity to observe an anomalous parity-dependent supercurrent in the Josephson junction setup.

References: [arXiv:1304.1685](https://arxiv.org/abs/1304.1685); PRL 110, 017003 ([arXiv:1210.5412](https://arxiv.org/abs/1210.5412))

2:00 PM
Tuesday, April 23, 2013
Room 4-331