
TCSUH Bi-Weekly Seminar

Enhancing the Superconducting Diode Effect

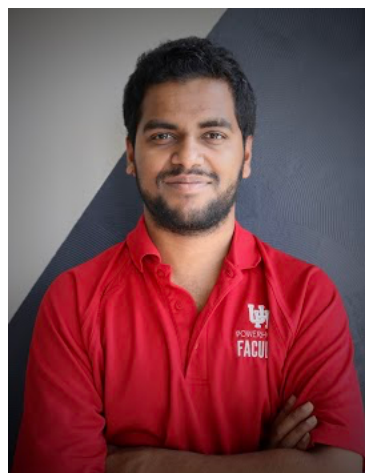
Prof. Pavan Hosur

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PI, Texas Center for Superconductivity at the University of Houston

Thursday, February 29, 2024

In Person – Room 102, Houston Science Center, 12:00 p.m. – 1:00 p.m

Sandwiches will be provided on a first-come, first-served basis.



ABSTRACT: The semiconductor diode is a ubiquitous building block of digital electronics. In recent years, significant progress has been made on a superconducting version of the diode effect, dubbed the superconducting diode effect (SDE). In this talk, I will recap recent progress in this field and present our contributions to it. In particular, I will describe how proximity-induced superconductivity in metals with skewed bands can potentially lead to a “perfect” SDE. Alternately, in bulk semimetals, I will discuss how the presence of multiple inequivalent pairing channels could enhance the SDE.

BIO: Prof. Pavan Hosur’s research interests are in theoretical condensed matter physics and quantum statistical mechanics. Within condensed matter theory, he is currently excited about topological phases of matter, especially gapless ones such as Dirac and Weyl semimetals. He is also interested in exploring unusual broken symmetry phases and devising ways to detect them in experiments. Questions in quantum statistical mechanics that he is thinking about revolve around quantum ergodicity, quantum chaos, and generally, how ideas from classical statistical mechanics apply to quantum systems. These questions have received a surge of interest lately via work on Eigenstate Thermalization and Many-Body Localization, but many aspects remain unclear. Hosur hopes to understand and contribute toward resolving them in the coming years.

Persons who require special accommodations to attend this lecture should call (713) 498-9703.
