MAX PLANCK INSTITUTE
FOR THE STRUCTURE AND DYNAMICS OF MATTER

ANNOUNCEMENT - TALK

Title: Topological Superconductivity, Majorana Zero Modes and Quantum Algorithms in Magnet-Superconductor Hybrid Systems

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Abstract

Magnet-Superconductor Hybrid (MSH) systems have proven to be versatile platforms for the engineering of topological superconductivity and the ensuing Majorana zero modes, an important step towards the realization of topological quantum computing. In particular, the experimental ability to create MSH system with widely varying magnetic structures -- from ferromagnetic and skyrmion-like to antiferromagnetic – has provided an unprecedented opportunity to manipulate and explore topological phases.

In this talk, I will review some recent progress in the theoretical prediction and experimental realization of novel topological superconducting phases – ranging from strong and higher order topological superconductors to topological nodal-point superconductivity -- in MSH systems. Moreover, I will demonstrate how the manipulation of the magnetic structure in MSH systems provides a new path to braiding MZMs and to the real time simulation of topologically protected quantum algorithms.

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Date/Time:	Tuesday, 07.07.2026 **at 12:30 p.m.**
Location:	**MPSD 900.EG.136**
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