



## Physical Sciences Seminar

# Topological superconductivity in phase-controlled Josephson junction arrays

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Host: Georgios Katsaros

The search for low-dimensional topological superconductivity is fueled by the promise of new and exotic physics, such as chiral superconductivity and non-Abelian anyons. However, the need to break time-reversal symmetry, usually by applying an external magnetic field, has hindered the realization of these novel phases of matter. We propose several schemes for realizing topological superconductivity by controlling just the superconductors' phases, without a need for an external exchange field. Our platforms rely on commonly available semiconductor-superconductor heterostructures, where spin-orbit coupling plays a central role. The main advantages of our approach over the existing ones are its tunability, its suitability to a wide range of materials, and the lack of field-induced impurity states. We complement the simplified models by an analysis of disorder effects and transport simulations.

**Tuesday, June 6, 2023 11:00am - 12:00pm**

Central Bldg / O1 / Mondi 2a+b (I01.O1.008) or join on Zoom:

<https://istaustria.zoom.us/j/65137518502?pwd=bkczaFRicDBwVUZZZUxZTVVjM0JGQT09>



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

Please find a schedule of the ISTA Shuttle on our webpage:

<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.