Seminar/Talk

Majorana zero modes in InAs/Al two-dimensional heterostructures

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There is growing interest in material systems that both support Majorana zero modes (MZMs), relevant for quantum computing, and can be fabricated into complex and scalable geometries. So far, MZMs have been tentatively identified in individual InSb or InAs nanowires with induced superconductivity. Future tests of non-Abelian statistics will likely involve braiding or interferometric measurement, requiring branched or looped geometries, challenging to realize using individual nanowires. I will present investigations of hybrid superconductor/semiconductor devices based on a planar InAs heterostructure strongly coupled to a thin layer of epitaxial Al. By top-down lithography, we define one-dimensional wires characterized by a hard superconducting gap, ballistic tunneling probes and in-plane critical fields up to 3 T. In the presence of an in-plane magnetic field, zero energy states robust in field emerge and show a behavior consistent with theory for MZMs, including low temperature saturation at the conductance quantum.I will conclude presenting recent progresses on advanced devices hosting MZMs and I will discuss ideas for future improvements in material quality and device geometry.

Thursday, January 25, 2018 12:00pm - 01:00pm
Mondi Seminar Room 3, Central Building

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