

Chez Pierre

Presents ...

Monday, March 28, 2022

12:00pm Noon

Broadcast via Zoom



Chez Pierre Seminar

Carlo Beenakker, Lorentz Institute, Leiden, The Netherlands

"Chirality inversion of Majorana edge modes in a Fu-Kane heterostructure"

Fu and Kane have discovered that a topological insulator with induced s-wave superconductivity supports chiral Majorana modes propagating on the surface along the edge with a magnetic insulator. We show that the direction of motion of the Majorana fermions can be inverted by the counterflow of supercurrent. The chirality inversion is signaled by a doubling of the thermal conductance of a channel parallel to the supercurrent. Moreover, the inverted edge can transport a nonzero electrical current, carried by a Dirac mode that appears when the Majorana mode switches chirality. The chirality inversion is a unique signature of Majorana fermions in a spinful topological superconductor: it does not exist for spinless chiral p-wave pairing.