



Physical Sciences Seminar

Majorana states in a three-site Kitaev chain

Alberto Bordin

QuTech, Delft University of Technology | NL

Host: Georgios Katsaros

Majorana bound states are non-abelian excitations predicted to emerge at the edges of topological superconductors. A toy model of a one-dimensional chain hosting such states was proposed by Kitaev [1] and can be implemented in quantum dots coupled by superconductors [2]. Remarkably, a minimal chain of just two sites can already host Majorana states [3] and was recently realized experimentally [4]. However, two-site Kitaev chains need fine-tuning to a sweet spot and are thus not topologically protected. In this work, we realise a three-site Kitaev chain device [5] and show signatures of Majorana states with increased protection.[1] A. Y. Kitaev, Physics-Uspekhi 44, 131 (2001), cond-mat/0010440.[2] J. D. Sau and S. D. Sarma, Nature Communications 3, 964 (2012), 1111.6600.[3] M. Leijnse and K. Flensberg, Physical Review B 86, 134528 (2012), 1207.4299.[4] T. Dvir, G. Wang, N. van Loo, C.-X. Liu, G. P. Mazur, A. Bordin, S. L. Ten Haaf, J.-Y. Wang, D. van Driel, F. Zatelli, et al., Nature 614, 445 (2023).[5] A. Bordin, X. Li, D. van Driel, J. C. Wolff, Q. Wang, S. L. ten Haaf, G. Wang, N. van Loo, L. P. Kouwenhoven, and T. Dvir, arXiv preprint arXiv:2306.07696 (2023).

Tuesday, January 30, 2024 11:00am - 12:00pm

Office Bldg West / Ground floor / Foyer seminar room (I21.EG.128)



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.