physikalisches Kolloquium

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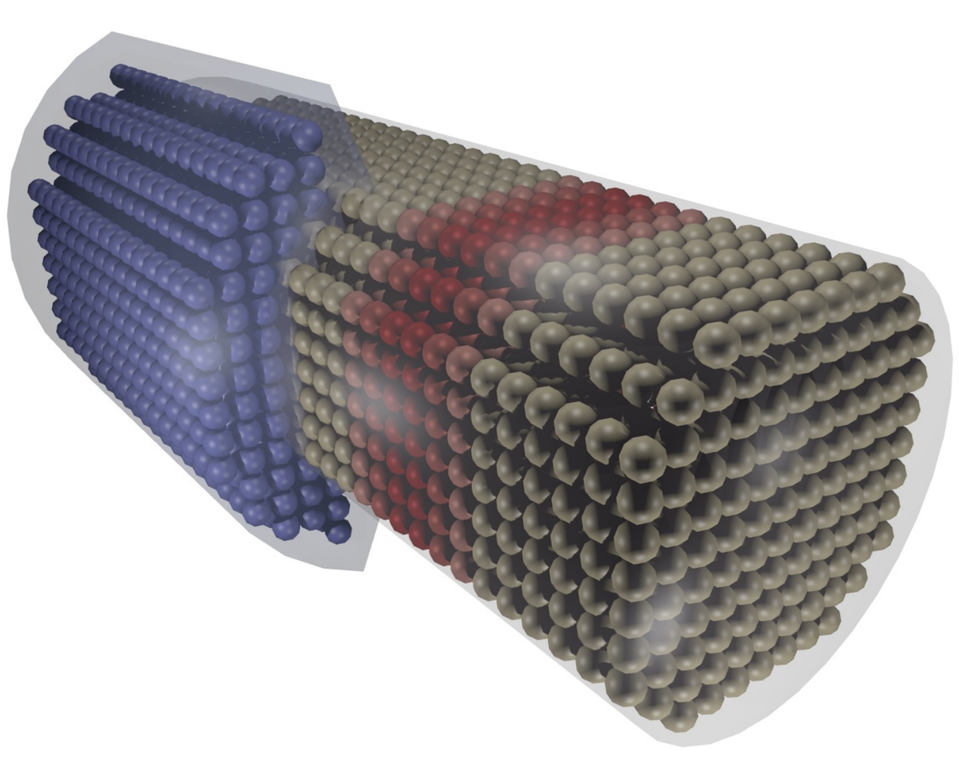
Towards topological quantum computing with Majorana bound states

Mo. 27.1.20
16:00 Uhr
Ort: H34

Mesoscopic superconducting devices host Andreev bound states – the superconducting generalization of a discrete quantum mechanical state. Engineering such device properly may result in a topological superconductor that hosts robust Andreev bound states, so-called Majorana bound states. These hold the promise of being the building block of a topological qubit that is intrinsically resilient to many types of errors.

In this talk I will review the progress in the field and discuss the new aspects topology brings to mesoscopic superconducting physics. In particular, I will show how a combination of numerical simulations and experimental results gave new insights into device quality, and I will discuss whether Majorana bound states have been observed unambiguously.



Discrete model for a Majorana nanowire used in numerical simulations