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Topological superconductivity in magnetic adatom chains on a superconductor- multiple topological phases and disorder TEEMU OJANEN, KIM PYHNEN, ALEX WESTSTRM, Department of applied physics, School of Science, Aalto University — Recent experimental efforts to realize topological superconductors and Majorana bound states in magnetic chains on top of a superconductor has stimulated lots of associated theory work. In this talk I will present recent results on topological superconductivity in dilute ferromagnetic chains on a superconducting surface with a Rashba spin-orbit coupling. We develop a theoretical framework that allows us to study the properties of magnetic chains at arbitrary subgap energies. Our analysis reveals that the system can support at least five distinct topological phases within realistic parameter regime. Our findings also show that the isolated bound-state energies do not need to be fine-tuned close to the gap centre and that the topological phases may be surprisingly robust towards various sources of disorder.

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