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Majorana and Subgap States in Hybrid superconducting Nanowires



助 教 授

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Abstract: Superconductor-semiconductor hybrid nanowire system is one of the leading platforms for studying emergent sub-gap states with variant topological orders. Here, I will give a brief review on the exploration of midgap states emerged in full-epitaxy hybrid nanowires. The ultra-clean SC-SM interface gives rise to high quality Andreev bound states, which can coalesce to Majorana bound states in the presence of spin-orbit field and Zeeman field. The effective g-factor and estimation of non-locality of those subgap states have been systematically investigated as well. I will also discuss how Andreev bound states in a superconductor ring evolves as a function of magnetic flux.

About the Speaker: Dr. Ming-Tang Deng got his B.Sc. in Computer Science at National University of Defense Technology of China in 2007 and his Ph.D. in Physics at Lund University of Sweden in 2013. From 2014 to 2017, he worked as a Postdoctoral Fellow at Center for Quantum Devices, Niels Bohr Institute, University of Copenhagen, Denmark, where he was appointed as Assistant Professor from 2017 to 2018. He was also appointed as Microsoft Consultant on topological quantum computing at Microsoft Q-Station, Copenhagen, Denmark. In 2018, he returned to National University of Defense Technology of China and has been appointed as Assistant Professor at Quantum Information Institute and State Key Laboratory of High Performance Computing of the university. His current research focuses include topological Matter, topological quantum computing, quantum transport, spintronics, superconducting materials, etc.