

An experimental PhD program in nonequilibrium quantum materials

The general area of research is in metastable quantum materials as a fundamental challenge in non-equilibrium physics with applications in quantum computing.

The PhD programme encompasses the use of ultrafast scanning tunnelling microscopy techniques to study metastable charge ordered states in quantum materials that form as a result of ultrafast laser excitation. The predominantly experimental programme focuses on advancing the state of the art techniques for investigating topologically constrained metastable nonequilibrium states, including superconducting-precursor states in layered transition metal chalcogenide heterostructures. The research will be performed in close collaboration with a theory group.

The PhD programme is in collaboration with SwissFEL at Paul Scherrer Institute in Switzerland, LCLS at Stanford and other free electron laser facilities for complementary studies of long range order dynamics and novel quantum devices.