

IQ8: **Julia Meyer** (Université Grenoble Alpes) 3h

“Josephson junctions: Andreev bound states and topology”

Josephson junctions are the basic circuit element of superconducting qubits. Their characteristics depend both on the superconductor used as well as on the material forming the weak link. Improvements in material growth and fabrication have led to the realization of a wide variety of different Josephson junctions with new and interesting properties. These include, e.g., Josephson junctions based on topological insulators, multiterminal junctions, and junctions in the quantum Hall regime. In this lecture series, I will discuss the formation of Andreev bound states in such junctions and the resulting phenomena as well as possible applications. Furthermore, I will describe how Josephson junctions can be used, both to probe and to emulate topological matter.