

IQ3: Michelle Filippone (CEA Grenoble)2h

"The Quantum Simulation of the Many-Body Problem"

In this lecture series, I will review the state of the art concerning the quantum simulation of the many-body problem. I will present a variety of experimental platforms, from ultracold atoms to solid-state architectures, and explain how they are providing us with innovative tools to investigate the strongly correlated physics of high- T_c superconductors and topological phases of matter. I will also discuss the profound impact these platforms are having on our understanding of the out-of-equilibrium dynamics in strongly correlated quantum systems and the challenges they pose to classical simulation.