

Engineering topological quantum matter in ultracold atomic gases

Sylvain Nascimbène

Laboratoire Kastler Brossel, Collège de France, Paris
sylvain.nascimbene@lkb.ens.fr

Ultracold atomic gases can be used to engineer various types of topological bands and topological states of matter. In these lectures, I will present the different approaches developed so far to engineer artificial magnetic fields and spin-orbit coupling, and compare the assets and limitations of each method. I will explain how these effects give rise to topological states of matter, and how to probe topological properties.