

Frédéric Chevy (École Normale Supérieure-Paris, France): *BEC-BCS crossover*

Abstract: from electrons in solids to quarks in nuclei, ensembles of strongly coupled fermions are ubiquitous in nature and are at the core of the quantum many-body problem. In my lecture, I will show how a joint theoretical and experimental effort unveiled some of the properties of these systems. In particular, experiments using ultracold atoms have confirmed a scenario that connects BEC condensation (BEC) and Bardeen-Cooper-Schrieffer's theory describing electrons in superconductors within the so-called BEC-BCS crossover.

There is no real prerequisite for the course, but students interested can read Zwerger, W. (Ed.). (2011). The BCS-BEC crossover and the unitary Fermi gas (Vol. 836). Springer Science & Business Media.