

Introduction to quantum many-body systems

Niccolò Traverso Ziani, Matteo Carrega (CNR-SPIN)

During the 20 hours of these lectures, some concepts in interacting quantum many-body systems will be discussed. The main topics will be

1. Interacting fermionic systems in $d=2,3$: Landau theory of the Fermi gas, magnetic instabilities, Wigner crystals.
2. Interacting fermionic systems in $d=1$: Luttinger liquid theory and the bosonization formalism.
3. Interacting bosonic systems in $d=1$: the exact solution of the Lieb-Liniger model via Bethe Ansatz.