

## **Abstract**

The course will present an introductory discussion of the equilibrium and dynamical properties of trapped ultracold atoms, with emphasis on the derivation and applications of the Gross-Pitaevskii equation and the Bogoliubov theory of the weakly interacting Bose gas. A discussion of nonlinear dynamics of the Gross-Pitaevskii equation and its soliton solutions will be also presented. The final part of the course will be devoted to the main properties of attractively interacting ultracold fermions.