

SEMINAR

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The impurity problem in ultracold atomic gases

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Abstract

The problem of an impurity coupled to a quantum bath is a central topic in condensed matter physics. Ultracold atoms, with the possibilities they offer to change the statistics of the bath, the dimensionality of the system and to tune the coupling strength between the impurity and the bath, have opened new interesting perspectives in this field. I will review some important aspects of the impurity, or polaron problem in ultracold gases, starting from the most studied both theoretically and experimentally Fermi polaron, i.e. an impurity coupled to a Fermi sea, and addressing new configurations such as dipolar atoms in bilayers and impurities resonantly interacting with a Bose condensate.