ID de Contribution: **24** Type: **Invited talk**

Two-body and many-body physics in the ultracold regime: a quantum chemist's perspective

mardi 23 février 2016 09:50 (30 minutes)

State-of-the-art ab initio methods of quantum chemistry have found numerous applications in many areas of atomic, molecular, condensed matter, and nuclear physics. During the last decade they have been applied with success to interpret precision experiments on two-body and many-body processes in atomic gases in the ultracold regime. In this talk I will present recent examples of successful applications of the ab initio methods to describe two-body processes in atomic optical lattices leading to the formation of unusual chemical bonds and observations of exotic optical transitions and state-resolved photofragmentation processes in diatomic molecules, as well as to many-body processes in one-dimensional harmonic traps of identical fermionic spin-1/2 atoms. All reported theoretical results will be illustrated by an extensive comparison between theory and high-precision experiments.

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Classification de Session: Session 3