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Stability of fermionic molecules in a Bose-Fermi mixture

DANIELE BORTOLOTTI, JILA, University of Colorado, LENS, University of Florence, ALEXANDER AVDEENKOV, IPPE (Obninsk, Russia), JOHN BOHN, JILA, University of Colorado — In the wake of successful experiments in Fermi condensates, experimental attention is broadening to include resonant interactions in degenerate Bose-Fermi mixtures. We consider the properties and stability of the fermionic molecules that can be created in such a mixture near a Feshbach resonance. To do this, we consider the two-body scattering problem in the many-body environment, and assess its complex poles. The stability properties of the resulting molecules are non-trivial, and depend strongly on their center-of-mass motion in the gas. We also study the effects of this physics on the equilibrium properties of the gas, and in particular on the molecular population and momentum distribution.

Daniele Bortolotti
JILA, University of Colorado, LENS, University of Florence

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