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Harmonically Trapped Atoms with Spin-Orbit Coupling CHUANZHOU ZHU, LIN DONG, HAN PU, Rice University — We study harmonically trapped atoms subjected to an equal combination of Rashba and Dresselhaus spin-orbit coupling induced by Raman transition. We first examine the wave function and the degeneracy of the single-particle ground state, followed by a study of two weakly interacting bosons or fermions. For the two-particle ground state, we focus on the effects of the interaction on the degeneracy, the spin density profiles, and the density-density correlation functions. Finally we show how these studies help us to understand the many-body properties of the system.

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