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Many-Body Transition in a Spin-Orbit Coupled Bose-Einstein Condensate JEFFREY T.F. POON, XIONG-JUN LIU, International Center for Quantum Materials, School of Physics, Peking University, Beijing 100871, China — In quantum mechanics, a resonant Rabi oscillation can occur between two degenerate single-particle states when such two states are subject to external perturbations. This phenomenon can be qualitatively different in the interacting regime. In this work, we study a spin-orbit coupled Bose-Einstein condensate with degenerate many-body states and examine the transitions between such states. We find that due to the particle-particle interactions the many-body transitions between such degenerate states are completely different from the physics in single-particle systems. Both the numerical and analytic results will be discussed.

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