

Abstract Submitted
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Dynamics of Bose-Einstein Recondensation in Higher Bands¹

VAIBHAV SHARMA, Cornell University, SAYAN CHOUDHURY, University of Pittsburgh, ERICH MUELLER, Cornell University — Motivated by recent experiments, we explore the kinetics of Bose-Einstein condensation in the upper band of a double well optical lattice. These experiments engineer a non-equilibrium situation in which the highest energy state in the band is macroscopically occupied. The system subsequently relaxes and the condensate moves to the lowest energy state. We model this process, finding that the kinetics occurs in three phases: The condensate first evaporates, forming a highly non-equilibrium gas with no phase coherence. Energy is then redistributed among the noncondensed atoms. Finally the atoms recondense. We calculate the time-scales for each of these phases, and explain how this scenario can be verified through future experiments.

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