

Abstract Submitted
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Phase-Sensitive Detection for Unconventional Bose-Einstein Condensations ZI CAI, Department of Physics, University of California, San Diego, LUMING DUAN, Department of Physics, University of Michigan, CONGJUN WU, Department of Physics, University of California, San Diego — We propose a phase-sensitive detection scheme to identify the unconventional $p_x \pm ip_y$ symmetry of the condensate wavefunctions of bosons, which have already been proposed and realized in high bands in optical lattices. Using the impulsive Raman operation combining with time-of-flight imaging, the off-diagonal correlation functions in momentum space give rise to the relative phase information between different components of condensate wavefunctions. This scheme is robust against the interaction and inter-band effects, and provides smoking gun evidence for unconventional Bose-Einstein condensations with nontrivial condensation symmetries.

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