

Abstract Submitted
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Tomography of Correlation Functions in Sodium Bose-Einstein Condensates¹ HAIYU LIANG, TIAN TIAN, HAOXIANG YANG, LIYUAN QIU, ANJUN CHU, YANBIN YANG, Tsinghua Univ, YINGMEI LIU, Department of Physics, Oklahoma State University, Stillwater, OK 74078, USA, LUMING DUAN, Department of Physics, University of Michigan, Ann Arbor, MI 48109, USA — Haiyu Liang 1, Tian Tian 1, Haoxiang Yang 1, Liyuan Qiu 1, Anjun Chu 1, Yanbin Yang 1, Yingmei Liu 2, and Luming Duan 1,3 1. Center for Quantum Information, IIIS, Tsinghua University, Beijing 100084, China 2. Department of Physics, Oklahoma State University, Stillwater, OK 74078, USA 3. Department of Physics, University of Michigan, Ann Arbor, MI 48109, USA We present a novel experimental scheme for reconstructing single-particle correlation functions of ultracold atoms from absorption images taken after various time of flights. The efficiency of this scheme is experimentally demonstrated in two different systems, i.e., a sodium Bose-Einstein condensate with an imprinted phase controlled by a digital mirror device, and a quasi-one-dimensional Bose gas of ultracold sodium atoms. This scheme is independent of atomic species, and may thus be applicable to other ultracold atomic systems.

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