

Abstract Submitted
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Near and far field studies of coherence in scalar Bose-Einstein condensates KATER MURCH, Department of Physics, University of California, Berkeley, JENNIE GUZMAN, Department of Physics, University of California, Berkeley, Materials Sciences Division, Lawrence Berkeley National Laboratory, MUKUND VENGALATTORE, Department of Physics, Cornell University, DAN STAMPER-KURN, Department of Physics, University of California, Berkeley, Materials Sciences Division, Lawrence Berkeley National Laboratory — We have studied the coherence properties of scalar ^{87}Rb condensates. Far field images, obtained in long time-of-flight revealed phase fluctuations of the condensate as modulations in the density of the gas. Near field images were obtained in short time of flight by interfering portions of the condensate separated by a variable distance. The decay of the contrast of this interference was related to the coherence length of the condensate. Using these dual techniques we have studied the coherence of scalar Bose gasses during and after condensate formation.

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