

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Theory of Raman Superradiance Imaging of Condensed Bose Gases** HERMANN UYS, PIERRE MEYSTRE, Department of Physics, University of Arizona — We investigate superradiant off-resonant Raman scattering of light from an elongated Bose-condensate of atoms. Absorption imaging of superradiant systems yields stronger image contrast than imaging of systems scattering light incoherently. However, the spatial structure of the recoiling atomic fields is not simply proportional to the initial state density. We present a multi-mode theory that reproduces the time evolving spatial features observed in absorption images and accounts for shot-to-shot fluctuations.

Hermann Uys  
Department of Physics, University of Arizona

Date submitted: 25 Jan 2006

Electronic form version 1.4