

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Observation of Strong Quantum Depletion in a Gaseous Bose-Einstein Condensate**<sup>1</sup> YINGMEI LIU, KAIWEN XU, DANIEL MILLER, JIT-KEE CHIN, WIDAGDO SETIAWAN, WOLFGANG KETTERLE, MIT TEAM — We studied quantum depletion in a gaseous Bose-Einstein condensate. An optical lattice enhanced the atomic interactions and modified the dispersion relation resulting in strong quantum depletion. The depleted fraction was directly observed as a diffuse background in the time-of-flight images. Bogoliubov theory provided a semi-quantitative description for our observations of depleted fractions in excess of 50%.

<sup>1</sup>This research is supported by NSF, ONR, ARO, and NASA

Yingmei Liu  
MIT

Date submitted: 27 Jan 2006

Electronic form version 1.4