

Abstract Submitted  
for the DAMOP11 Meeting of  
The American Physical Society

**Generating sodium Bose-Einstein condensates in hybrid magnetic quadrupole and optical traps** JIE JIANG, ZONGKAI TIAN, ALEX BEHLEN, JARED AUSTIN, JOHN JEPSON, YINGMEI LIU, Department of Physics, Oklahoma State University, Stillwater, OK 74078 — We present the design and construction of a novel apparatus to rapidly and simply generate  $^{23}\text{Na}$  Bose-Einstein condensates in hybrid magnetic and optical traps. Sodium atoms are collected in a magnetic-optical trap, captured in a magnetic quadrupole trap, and then cooled through forced radio-frequency evaporation. To avoid Majorana spin-flip losses at the center of the magnetic quadrupole trap, the cold dense atomic cloud is transferred to a crossed red-detuned optical dipole trap. By reducing the optical trap depth, sodium Bose-Einstein condensates are generated from forced evaporation and rethermalization in the crossed optical trap. This hybrid approach combines the advantages of both magnetic quadrupole and optical traps.

Jie Jiang  
Oklahoma State University

Date submitted: 01 Feb 2011

Electronic form version 1.4