

Abstract Submitted  
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**Generating sodium Bose-Einstein condensates in hybrid magnetic quadrupole and optical traps** ZONGKAI TIAN, JIE JIANG, 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.

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