

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Sorting Category: 6.7 (E)

**Magnetic Trapping of Atomic Nitrogen and Cotrap-
ping of NH** MATTHEW HUMMON, WESLEY CAMPBELL, Depart-
ment of Physics, Harvard University; Harvard-MIT Center for Ultra-
cold Atoms, HSIN-I LU, Division of Engineering and Applied Sciences,
Harvard University; Harvard-MIT Center for Ultracold Atoms, EDEM
TSIKATA, YIHUA WANG, JOHN DOYLE, Department of Physics,
Harvard University; Harvard-MIT Center for Ultracold Atoms — We
observe magnetic trapping of atomic nitrogen (^{14}N) and cotrapping of
 ^{14}NH ($X^3\Sigma^-$). We use buffer gas cooling to load the magnetic trap
directly from a room temperature molecular beam generated by a radio-
frequency plasma source. We trap approximately 1×10^{11} ^{14}N atoms
at a peak density of $5 \times 10^{11} \text{ cm}^{-3}$ at a temperature of ≈ 550 mK. The
 $1/e$ lifetime of nitrogen in the trap of $12 \pm 5/-3$ s is limited by collisions
with the helium buffer gas. This lifetime sets a limit on the inelastic
rate constant for ^{14}N - ^3He collisions of $\Gamma_{in} < 2.2 \times 10^{-16} \text{ cm}^3 \text{ s}^{-1}$. ^{14}N
and ^{14}NH are cotrapped, with 4×10^{10} ^{14}N atoms and 1×10^8 ^{14}NH
molecules at peak densities of $n_N \approx 1 \times 10^{11} \text{ cm}^{-3}$ and $n_{NH} \approx 1 \times 10^8$
at a temperature of ≈ 550 mK.

Prefer Oral Session
 Prefer Poster Session

Matthew Hummon
hummon@fas.harvard.edu
Department of Physics, Harvard University

Date submitted: 31 Jan 2008

Electronic form version 1.4