

Abstract Submitted  
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**Progress towards a Continuous-Wave BEC** C. HEMPEL, R. MHASKAR, M. TRAXLER, V. VAIDYA, S. OLSON, G. RAITHEL, FOCUS Center, Physics Department, University of Michigan, Ann Arbor, MI, 49109 — We report on progress towards a continuous-wave BEC. A currently operational high-gradient magnetic-guide structure provides us with a beam of cold  $^{87}\text{Rb}$  atoms. The atomic flux in the guide is  $\sim 2 \times 10^7$  atoms  $\text{s}^{-1}$  with a transverse temperature of  $420 \mu\text{K}$  and a longitudinal temperature of  $1 \text{ mK}$ . Simulations suggest that an increased input flux in the guide of  $10^9$  atoms  $\text{s}^{-1}$  at a temperature of  $100 \mu\text{K}$  combined with continuous evaporative cooling will enable the system to reach quantum degeneracy. We give an overview of the strategies and recent progress towards achieving this goal, including a Zeeman slower atomic beam source, complete optical isolation of the atomic guide from the injection stage using mechanical shutters and surface adsorption evaporative cooling. An outlook on usage of the atom laser in inertial sensor applications involving spiral guide structure will be discussed.

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