

Abstract Submitted  
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**An ultracold potassium Rydberg source for experiments in quantum optics and many-body physics**<sup>1</sup> CHARLES CONOVER, PAMELA DUPRE, AI PHUONG TONG, CARLVIN SANON, KEVIN CLARKE, BRIAN DOOLITTLE, STEPHEN LOURIA, PHILIP ADAMSON, Colby College Department of Physics and Astronomy — We report on the development of an apparatus for the study of quantum dynamics of Rydberg atoms of potassium. Samples of Rydberg atoms at 1 mK and varying density are excited in a magneto-optical trap of  $10^7$  K-39 atoms. The atoms are excited to Rydberg states in a steps from 4s to 5p and from 5p to *ns* and *nd* states using stabilized external-cavity diode lasers at 405 nm and 980 nm. Selective field ionization and detection with microchannel plates provides a platform for spectroscopic measurements in potassium, exploration of multiphoton processes, and experiments on cold atom collisions.

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