

Abstract Submitted
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Interactions of low-energy ions and electrons with Bose-Einstein condensates RACHEL SAPIRO, RUI ZHANG, GEORG RAITHEL, University of Michigan, FOCUS — We will present plans for experiments intended to explore interactions between low-energy ions and electrons and Bose-Einstein condensates (BECs). The BEC apparatus, which will be described in the presentation, is a double-trap system that employs miniature U-trap and Z-trap configurations for the final stages of atom trapping and cooling. Currently, we create BECs with $\sim 3 \times 10^5$ rubidium atoms. Planned modifications of the apparatus will allow us generate, control and image ions in present inside the BEC. In our presentation, we will describe the complete setup, discuss experimental progress, and outline the planned experiments. These include studies of changes in the effective mass of the ions due to clusters of atoms forming around them [1], and of perturbations of the BEC due to the presence of embedded ions [2].

[1] R. Côté, V. Kharchenko, M. D. Lukin, Phys. Rev. Lett. **89**, 093001 (2002).

[2] P. Massignan, C. J. Pethick, H. Smith, Phys. Rev. A **71**, 023606 (2005).

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