Abstract Submitted
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Bragg Spectroscopy of a Strongly Interacting ^{85}Rb Bose-Einstein Condensate ROBERT WILD, JILA, SCOTT PAPP, JUAN PINO, SHAI RONEN, JOHN BOHN, DEBORAH JIN, CARL WIEMAN, ERIC CORNELL — We report on measurements of the large-momentum excitation spectrum of a strongly interacting Bose-Einstein condensate (BEC). Using a magnetic-field Feshbach resonance to tune atom-atom interactions in the condensate, we reach a regime where quantum depletion of the ground state and beyond mean-field corrections to the condensate chemical potential are significant. The Bragg resonance line shift due to strong interactions was found to be significantly less than that predicted by a mean-field theory, and demonstrates the onset of beyond mean-field effects in a gaseous BEC as Ref[1].

[1] E. K. Irish, Phys. Rev. Lett. **99**, 173601 (2007).

Robert Wild
JILA

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