

Abstract Submitted
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Bragg Spectroscopy of a Strongly-Interacting Homogeneous BEC: probing quantum depletion RAPHAEL LOPES, CHRISTOPH EIGEN, ADAM BAKER, NIR NAVON, ZORAN HADZIBABIC, ROBERT SMITH, Univ of Cambridge — We will present Bragg spectroscopy measurements performed on a homogeneous Bose-Einstein condensate (BEC) as a function of interaction strength. The width and position of the Bragg resonance reveal the momentum distribution and energy shift of the ground state, respectively. We observe that the width increases as a function of interaction strength and interpret this behavior as a result of quantum depletion of the condensate, induced by interactions. The central frequency of the resonance grows linearly with the interaction strength (mean-field behavior) but is reduced as the interaction strength further increases; being completely suppressed at high values.

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