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Generation of squeezing in a driven many-body system BHARATH HEBBE MADHUSUDHANA, MATTHEW BOGUSLAWSKI, MARTIN ANQUEZ, BRYCE ROBBINS, MARYROSE BARRIOS, Georgia Inst of Tech, THAI HOANG, Purdue University, MICHAEL CHAPMAN, Georgia Inst of Tech — In a spin-1 Bose-Einstein condensate, the non-linear spin-dependent collisional interactions can create entanglement and squeezing. Typically, the condensate is initialized at an unstable fixed point of the phase space, and subsequent free evolution under a time-independent Hamiltonian creates the squeezed state. Alternatively, it is possible to generate squeezing by driving the system localized at a stable fixed point. Here, we demonstrate that periodic modulation of the Hamiltonian can generate highly squeezed states. Our measurements show -5 dB of squeezing, limited by the detection, but calculations indicate that a theoretical potential of -20 dB of squeezing [1]. We discuss the advantages of this method compared with the typical techniques.
[1] Hoang, T. M. et al, arXiv:1512.05645

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