

Abstract Submitted
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Lattice dynamics in Bosonic ${}^7\text{Li}$ ¹ HUIYAO Y. CHEN, MINWOO JUNG, JACOB RABINOWITZ, IVAYLO S. MADJAROV, HIL F. H. CHEUNG, YOGESH SHARAD PATIL, MUKUND VENGALATTORE, Cornell University — The light mass and strong spin-dependent interactions in ${}^7\text{Li}$ make it an attractive candidate to study Bosonic quantum magnetism and lattice dynamics in regimes where rapid dynamics is favored, e.g. percolative transport and entropy segregation. Such studies require large ensembles of quantum degenerate ${}^7\text{Li}$ atoms which has proved to be a technical challenge. We describe our ongoing efforts to overcome this challenge using Raman sideband cooling (RSC). In addition to enabling the rapid production of large degenerate gases, RSC is also a very powerful means of local control of lattice gas dynamics [1]. Extending this to a spinful ${}^7\text{Li}$ Bose gas will also enable studies of transport and defect dynamics in $F=1$ lattice gases.

[1] Y. S. Patil et al., PRL 115, 140402 (2015)

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