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Roton minimum-like excitations in a Bose-Einstein condensate¹ M.A. KHAMEHCHI, M.E. MOSSMAN, PETER ENGELS, Department of Physics and Astronomy, Washington State University — We report on experiments utilizing Bragg spectroscopy to probe the excitation spectrum of a spin-orbit coupled BEC. The spin-orbit coupling is induced by a Raman dressing scheme. The resulting dispersion relation features an interesting minimum at nonzero quasimomentum, reminiscent of the roton minimum known e.g. from superfluid helium systems. The current status of the experiment and our progress toward understanding the implications of this roton-like minimum will be discussed.

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