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Progress towards a ^{41}K spinor Bose-Einstein condensate NATHAN HOLMAN, SRUTI PRATHIVADHI-BHAYANKARAM, LUCAS SLATTERY, ALEX TARTER, JONATHAN WRUBEL¹, Creighton University — We report on the progress made in constructing an apparatus to create a potassium-41 Bose-Einstein condensate (BEC) at Creighton University, a primarily undergraduate institution. Several major components of the experiment have been completed including an external-cavity diode laser, laser characterization systems, and the saturated absorption system for laser wavelength locking. Our immediate goals are to complete construction of an atomic source and 2D magneto-optical trap by summer's end. We plan to use this system to study spinor physics in a ^{41}K BEC. Namely, we will utilize predicted radio-frequency Feshbach resonances to continuously alter the magnetic properties of the system from ferromagnetic to anti-ferromagnetic. Using the radio-frequency Feshbach resonance we aim to explore previously inaccessible magnetic phases and their dynamics.

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