

Abstract Submitted  
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**Orientation-resolved imaging of rotational superposition states in ultracold LiRb** IAN STEVENSON, DAN ELLIOTT, Purdue Univ — We present work toward coherent detection and imaging of rotational superposition states in ultracold lithium-rubidium. Starting from  $X^1\Sigma^+v = 43, J = 0$ , populated by photoassociation in a dual species MOT, we apply a RF pulse to form a  $J = 0/J = 1$  superposition state. The molecules are ionized by a frequency comb source whose repetition rate is phase coherent with the RF field. We present spectra highlighting a 3-photon doubly-resonant ionizing transition starting from  $X^1\Sigma^+v = 43, J = 0$  and  $X^1\Sigma^+v = 43, J = 1$  as well as preliminary results toward orientation-resolved imaging of the superposition state.

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