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Engineered p-wave collisions in ultracold Fermionic systems LAUREN AYCOCK, Cornell University / NIST / JQI, DINA GENKINA, JQI / University of Maryland / NIST, BENJAMIN STUHL, JQI / NIST, IAN SPIELMAN, JQI / NIST / University of Maryland — This experiment demonstrates the p-wave and higher odd partial waves describing interactions in a spin polarized Fermi gas: critical for engineering utlracold Fermi gases to support Majorana fermions [1]. Here, we describe an experiment which combines known experimental techniques for modifying interactions between atoms in a unique way to artificially engineer p-wave collisions in ultracold Fermionic systems. Using s-wave Feshbach resonances to tune interactions in degenerate Fermi gases have been very fruitful in studying many-body quantum physics; however, p-Wave Feshbach resonances are limited in their usefulness by large inelastic loss rates [2,3]. In combination with an s-Wave Feshbach resonance, we modify the fermionic interaction by laser-dressing. We already demonstrated that this technique introduces d- and g-wave contributions to the s-wave scattering in degenerate Bose gases [4].

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