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Is it possible to access the strongly interacting regime with a ^{6}Li^{40}K Fermi-Fermi mixture? ANDREAS TRENKWALDER, CHRISTOPH KOHSTALL, FREDERIK SPIEGELHALDER, DEVANG NAIK, GERHARD HENDL, FLORIAN SCHRECK, RUDOLF GRIMM, Inst. for Quantum Optics and Quantum Information, Austrian Acad. of Sciences, and Inst. of Experimental Physics, Innsbruck Univ., Innsbruck, Austria — Interspecies Feshbach resonances in the ^{6}Li^{40}K Fermi-Fermi mixture are closed-channel dominated and quite narrow. With the goal to realize a strongly interacting mixture we have measured the elastic and inelastic scattering properties across one of the widest interspecies resonances available in this system. Our results identify the narrow magnetic field range where the scattering length exceeds the interparticle spacing. We report on our first experimental steps exploring this strongly interacting regime.

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