Novel Feshbach resonances in a $^{40}\text{K}$ spin-mixture$^1$ J.T.M. WALRAVEN, A. LUDEWIG, T.G. TIECKE, University of Amsterdam — We present experimental results on novel s-wave Feshbach resonances in $^{40}\text{K}$ spin-mixtures. Using an extended version of the Asymptotic Bound-state Model (ABM) [1] we predict Feshbach resonances with more promising characteristics than the commonly used resonances in the $|F,m_F\rangle = |9/2,-9/2\rangle + |9/2,-7/2\rangle$ and $|9/2,-9/2\rangle + |9/2,-5/2\rangle$ spin mixtures. We report on an s-wave resonance in the $|9/2,-5/2\rangle + |9/2,-3/2\rangle$ mixture. We have experimentally observed the corresponding loss-feature at $B_0 \sim 178$ G with a width of $\sim 10$G. This resonance is promising due to its large predicted width and the absence of an overlapping p-wave resonance. We present our recent results on measurements of the resonance width and the stability of the system around this and other observed s-wave and p-wave resonances.


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