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Novel Feshbach resonances in a ^{40}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}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$_F$ $>$) $|9/2,-9/2\rangle + |9/2,-7/2\rangle$ 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$10G. 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.

[1] T.G. Tiecke, et al., Phys. Rev. Lett. 104, 053202 (2010).

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