NEAR-THRESHOLD MAGNETIC SPECTROSCOPY IN ULTRACOLD ALKALI MIXTURES

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Magnetic spectroscopy of Feshbach resonances occurring in ultracold atom collisions represents a powerful tool which allows interatomic potential parameters to be determined with very high accuracy. A key feature of low-energy collisions is that scattering observables and the position of weakly bound molecular levels are intimately related. I will show how this property can be used to construct an accurate theoretical collision model from suitable experimental information. The nature of Feshbach resonances will be discussed with reference to very recent joint experimental-theoretical analyses of boson-boson and boson-fermion K-Rb mixtures of major experimental interest. Implications of the present results for future experiments with ultracold homonuclear and heteronuclear gases will also be discussed.