Analytic descriptions of two atoms in a trap and around a magnetic Feshbach resonance\(^1\) CONSTANTINOS MAKRIDES, MING LI, BO GAO, University of Toledo — We present an analytic description of two atoms in a trap and around a magnetic Feshbach resonance. It is achieved by combining a multiscale quantum-defect theory for two atoms in a symmetric harmonic trap\(^2\), with a new analytic description of ultracold atomic interactions around a magnetic Feshbach resonance. The theory is applicable to both broad and narrow resonances, or anything in between, and is applicable to Feshbach resonances of arbitrary \(l\). It will be illustrated for sample alkali-metal resonances of experimental interest.

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