

Abstract Submitted
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Feshbach resonances and the asymptotic bound state model K.W. MADISON, University of British Columbia — Information regarding the interatomic interaction potentials can be extracted from the positions and widths of experimentally observed magnetic Feshbach resonances (FRs). These potentials can, in turn, be used to predict the positions of other resonances. However, a full quantum scattering calculation is computationally intensive, and iteratively finding the proper model potentials to reproduce the experimentally observed resonances can be a lengthy process. To simplify this search and to gain some physical insight into the scattering properties, one can utilize the so-called “asymptotic bound state model” to determine the energies of the last bound states of, for alkali mixtures, the triplet and singlet potentials consistent with the experimentally observed FRs. The potential curves can then be tuned to reproduce these bound state energies, and fine tuning of the potentials can be done using a full quantum scattering calculation. We will present the details, advantages, and limitations of this ABS model. We will also provide an example of its use in the recent determination of the Li–Rb interaction potentials from two experimentally measured FRs.

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