

Abstract Submitted
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Observation of broad p-wave Feshbach resonances in a ^{85}Rb - ^{87}Rb mixture SHEN DONG, YUE CUI, CHUYANG SHEN, YEWEI WU, XIAOBIN MA, State Key Laboratory of Low Dimensional Quantum Physics, Department of Physics, Tsinghua University, BO GAO, Department of Physics and Astronomy, University of Toledo, MENG KHOON TEY, LI YOU, State Key Laboratory of Low Dimensional Quantum Physics, Department of Physics, Tsinghua University; Collaborative Innovation Center of Quantum Matter — We observe new Feshbach resonances in ultracold mixtures of ^{85}Rb and ^{87}Rb atoms in the $^{85}\text{Rb}|2, -2\rangle + ^{87}\text{Rb}|1, -1\rangle$ and $^{85}\text{Rb}|2, +2\rangle + ^{87}\text{Rb}|1, +1\rangle$ scattering channels. The positions and properties of the resonances are predicted and characterized using the semi-analytic multichannel quantum-defect theory by Gao [1]. Of particular interest, a number of broad entrance-channel dominated p-wave resonances are identified, implicating exciting opportunities for studying a variety of p-wave interaction dominated physics of superfluid boson mixtures, such as three-body recombination decay and formation of p-wave heteronuclear molecules.

[1]Bo Gao, Phys. Rev. A 84, 022706 (2011).

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