Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Observation of broad p-wave Feshbach resonances in a ^{85}Rb-^{87}Rb mixture SHEN DONG, YUE CUI, CHUYANG SHEN, 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 — Many Feshbach resonances are observed in an ultracold mixture of ^{85}Rb-^{87}Rb atoms, including three previously unknown resonances in the lowest ground state channel of $^{85}\mathrm{Rb}|2,2\rangle\otimes^{87}\mathrm{Rb}|1,1\rangle$ and three new ones in the higher ground channel $|2,-2\rangle\otimes|1,-1\rangle$ [1]. Of particular interests, we discover a wide and open-channel-dominated p-wave resonance, 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. This study is made possible by the predictive power of the semi-analytic multi-channel quantum defect theory (MQDT) [2].

1. S. B. Papp and C. E. Wieman,Phys. Rev. Lett. **97**, 180404 (2006).
2. Bo Gao, Phys. Rev. A **84**, 022706 (2011).

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Date submitted: 29 Jan 2016 Electronic form version 1.4