Abstract Submitted
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Heteronuclear three-body parameter pinned down by multichannel spinor model[1] YUJUN WANG, Department of Physics, Kansas State University, Manhattan, Kansas, 66506, PAUL S. JULIENNE, Joint Quantum Institute, University of Maryland and NIST, College Park, Maryland 20742, CHRIS H. GREENE, Department of Physics and Astronomy, Purdue University, West Lafayette, Indiana 47907-2036 — Although a quantitative study of ultracold three-body collisions has been recently performed for homonuclear atomic systems [1], a similar theoretical study for heteronuclear ones has not been available. In this work we show progress in predicting Efimov-like three-body resonances using multichannel spinor models. In particular, we show that our calculations correctly predict the experimental observed isotope dependence of the atom-diatomic resonances in ^{87}Rb-^{87}Rb-^{40}K and ^{87}Rb-^{87}Rb-^{41}K systems [2,3] without fitting parameters. Our study demonstrates that with our simple spinor models, quantitative characterization of ultracold chemical processes for heteronuclear systems is in principle feasible. Application of our model to other heteronuclear alkali-metal systems is also discussed.

[1] Y. Wang and P. S. Julienne, Nature Phys. 10, 768 (2014).
[2] R. S. Bloom, *et al.*, Phys. Rev. Lett. 111, 105301 (2013).
[3] K. Kato, *et al.*, in preparation (2015).

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