

Abstract Submitted
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Towards inclusion of excited vibrational states in ultracold molecule-molecule quantum scattering calculations CHRISTOPHER TICKNOR, BRIAN KENDRICK, Los Alamos Natl Lab — We report progress towards including excited vibrational states in quantum scattering calculations of NaK-NaK at ultracold temperatures. We systematically use all pair potentials to build a complete 4 body potential energy surface. We study this 4-body potential and the asymptotic ro-vibrational 2-body basis. This allows for a more complete interaction as two molecules approach each other. We study where and how vibrationally excited states influence the asymptotic 2-body ro-vibrational scattering potentials. This work is an intermediate step in performing the complete scattering calculations as we develop tools to bring together the long range, ultracold 2-body scattering problem and the short range 4-body quantum chemistry problem.

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