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Long-lived complexes and the role of chaos in ultracold molecular collisions[1] N. BALAKRISHNAN, J. F. E. CROFT, University of Nevada, Las Vegas, NV 89154, B. K. KENDRICK, Theoretical Division (T-1, MS B221), Los Alamos National Laboratory, Los Alamos, NM 87545 — Thermally averaged lifetimes for complexes formed during ultracold elastic collisions of K_2 with Rb, from numerically-exact quantum-scattering calculations, are shown to be in remarkable agreement with the predictions of simple density-of-states models. The validity of such models is of current interest as they suggest the cause of trap loss in ultracold gases of alkali-dimers is long-lived complexes. Long-lived complexes correspond to narrow scattering resonances which we examine for the statistical signatures of quantum chaos, finding that the positions and widths of the resonances are in good agreement with the Wigner-Dyson and Porter-Thomas distributions respectively.

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