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Quantum Dynamics of the Ultracold LiNa + Li Chemical Reaction[1] J. F. E. CROFT, University of Nevada, Las Vegas, NV 89154, M. LI, H. LI, Temple University, Philadelphia, PA 19122, A. PETROV, NRC "Kurchatov Institute" PNPI, Gatchina, Leningrad district 188300, Division of Quantum Mechanics, St.Petersburg State University, Russia, B. K. KENDRICK, Theoretical Division (T-1, MS B221), Los Alamos National Laboratory, Los Alamos, NM 87545, N. BALAKRISHNAN, University of Nevada, Las Vegas, NV 89154, S. KOTOCHIGOVA, Temple University, Philadelphia, PA 19122 — Ultracold gases of polar molecules present an opportunity to examine chemical reactions with unprecedented control and precision. Chemical reactions involving KRb+KRb and K+KRb systems have been experimentally studied and their rates have been shown to be universal in nature. The LiNa molecule being the lightest heteronuclear polar molecule comprised of alkali metal atoms is of current experimental interest, in part because its chemical reaction with Li atom leading to Li_2+Na is expected to exhibit non-universal behavior. Here, we report explicit quantum dynamics of the Li+LiNa$\rightarrow$$Li_2$+Na reaction with full ro-vibrational product state resolution. We will discuss how three-body forces influence the reactivity and also explore non-adiabatic effects on the reaction dynamics.

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