

Abstract Submitted
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Collisions of cold polar molecules in a microwave cavity T.V. TSCHERBUL, Harvard University, S.V. ALYABYSHEV, R.V. KREMS, University of British Columbia, Vancouver, Canada — We present accurate quantum calculations for low-temperature collisions of polar molecules and atoms in a microwave laser field. The effects of the radiation field on the collision dynamics are described exactly using the dressed-state formalism of quantum optics. Our calculations identify new mechanisms for rotational relaxation of molecules placed in a microwave cavity and indicate that molecular collisions at temperatures below 0.5 K can be efficiently manipulated with microwave laser fields of moderate strength.

Timur Tscherbul
Harvard University

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