

Abstract Submitted
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Cold collisions of OH($^2\Pi$) molecules with ^3He atoms in combined electric and magnetic fields T.V. TSCHERBUL, Harvard University, G.C. GROENENBOOM, Radboud University Nijmegen, Netherlands, R.V. KREMS, University of British Columbia, Vancouver, Canada, A. DALGARNO, Harvard University — The realization of a new magneto-electrostatic trap for cold polar molecules suggests new possibilities of using combined electric and magnetic fields to manipulate molecular collisions at low temperatures. We use accurate quantum mechanical calculations to analyze the effects of parallel electric and magnetic fields on collision dynamics of OH molecules. It is demonstrated that spin relaxation in He-OH collisions at temperatures below 0.01 K can be effectively suppressed by moderate electric fields of order 10 kV/cm. We show that electric fields can be used to manipulate Feshbach resonances in collisions of cold molecules. Our theoretical results can be tested in experiments with OH molecules in Stark decelerated molecular beams and magneto-electrostatic traps.

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