

Abstract Submitted  
for the DAMOP16 Meeting of  
The American Physical Society

**Shielding ultracold dipolar molecular collisions with electric fields**<sup>1</sup> GOULVEN QUÉMÉNER, Laboratoire Aimé Cotton, CNRS, JOHN BOHN, JILA, NIST, and Department of Physics, University of Colorado — The prospect for shielding ultracold dipolar molecules from inelastic and reactive collisions is investigated [1]. Molecules placed in their first rotationally excited states are found to exhibit effective long-range repulsion for applied electric fields above a certain critical value. This repulsion can safely allow the molecules to scatter while reducing the risk of inelastic or chemically reactive collisions. Several molecular species of molecules of experimental interest such as NaRb, NaK, RbSr, SrF, BaF, and YO, are considered and all are shown to exhibit orders of magnitude suppression in quenching rates in a sufficiently strong laboratory electric field. [1] G. Quéméner, J. L. Bohn, Phys. Rev. A 93, 012704 (2016).

<sup>1</sup>We acknowledge the financial support of the COPOMOL project (ANR-13-IS04-0004) from Agence Nationale de la Recherche and the ARO MURI Grant No. W911NF-12-1-0476.

Goulven Quéméner  
Laboratoire Aimé Cotton, CNRS

Date submitted: 26 Jan 2016

Electronic form version 1.4