

Abstract Submitted
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Electric field controlled collisions between polar molecules and Rydberg atoms MARTIN ZEPPENFELD, FERDINAND JARISCH, MPI of Quantum Optics — Controlling collisions and chemical reactions via external electric or magnetic fields provides unprecedented control over such processes, with applications including Feshbach association of ultracold molecules from ultracold atoms. We present electric field controlled collisions between polar molecules and Rydberg atoms. State changing collisions between polar molecules and Rydberg atoms are mediated by Förster resonant energy transfer. Changing the resonance condition via electric fields allows the collision cross section to be varied. Our work is a first step towards quantum control of hybrid molecule-Rydberg-atom systems, with possible applications including efficient nondestructive detection of polar molecules[1]. [1] M. Zeppenfeld, arXiv:1611.08893 [physics.atom-ph] (2016).

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