

Abstract Submitted
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Universal Dipolar Scattering CHRISTOPHER TICKNOR, ARC Centre of Excellence for Quantum-Atom Optics and Centre for Atom Optics and Ultrafast Spectroscopy — We explore the impact of the short range interaction on the scattering of ground state polar molecules, and study the transition from a weak to strong dipolar scattering over an experimentally reasonable range of energies and electric field values. In the strong dipolar limit, the scattering scales with respect to a dimensionless quantity defined by mass, induced dipole moment, and collision energy. The scaling has implications for all quantum mechanical dipolar scattering, and therefore this universal dipolar scaling provides estimates of scattering cross sections for any dipolar system. Furthermore the universal scattering regime will readily be achieved with polar molecules at ultracold temperatures.

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