

Abstract Submitted
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Non-adiabatic coupling in cold collisions of spin-polarized metastable hydrogen atoms¹ ROBERT C. FORREY, Department of Physics, Pennsylvania State University at Berks, ALEX DALGARNO, Harvard-Smithsonian Center for Astrophysics, YULIAN V. VANNE, ALEJANDRO SAENZ, AG Moderne Optik, Institut fuer Physik, Humboldt-Universitaet zu Berlin , PIOTR FROELICH, Department of Quantum Chemistry, Uppsala University — Previous calculations of low temperature cross sections for collisions between metastable hydrogen atoms are improved to include non-adiabatic radial and angular coupling. The electrostatic dipole-quadrupole interaction produces non-adiabatic radial coupling between (2s,2p) and (2p,2p) states while the Coriolis interaction produces non-adiabatic angular coupling. Both of these long-range contributions are handled in a space-fixed atomic gauge that is particularly convenient for a spin-polarized system. The improved theoretical results are compared with an existing experiment.

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Robert Forrey
Penn State University

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