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Abstract for an Invited Paper
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Spin-Dependent Effects in Electron-Molecule Scattering¹

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This talk will review the study of electron-molecule collisions that use electron polarization as a probe of the collision dynamics. Compared with atoms, early experiments with molecular targets seemed to indicate a “quenching” of spin-dependent effects. Measurements by the Rice [1] and Muenster [2] groups showed that exchange cross sections for electron-molecule scattering were much smaller than those for atoms. These discrepancies were never adequately explained. More recently, measurements by our group and at Muenster have given similar results when collision-induced fluorescence is observed. We will discuss these latter fluorescence measurements with H₂ and N₂ targets in detail, and show how rotational resolution of the electron-impact excited states can resolve, at least partially, the “quenching” puzzle.

[1] G.H. Rutherford *et alii*, Rev. Sci. Instrum. **61**, 1460 (1990).

[2] T. Hegemann *et alii*, J.Phys.B **26**, 4607 (1993).

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