

Abstract Submitted
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A multi-beam model for low-current, very high E/N discharges in hydrogen. A.V. PHELPS, JILA, University of Colorado and NIST — The multi-beam model of Helm and Störi¹ has been applied to the motion and reactions of H^+ , H_2^+ , H_3^+ , fast H_2 , and fast H in H_2 for a uniform electric field. Plots of most of our analytic expressions for the cross sections are available². Elastic scattering of non-identical particles is modelled with an energy loss for backward scattering in center-of-mass and the elastic momentum transfer cross section. For identical particles, we use the energy loss for 90° scattering and the elastic viscosity cross section. Calculated rates of excitation of H_α and the uv continuum versus distance and pressure are compared with experiments^{3,4}. Calculated ion and fast neutral fluxes at the cathode will be compared with calculations using Monte Carlo methods⁵.

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