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 Störi\textsuperscript{1} has been applied to the motion and reactions of H\textsuperscript{+}, H\textsubscript{2}\textsuperscript{+}, H\textsuperscript{+}, fast H\textsubscript{2}, and fast H in H\textsubscript{2} for a uniform electric field. Plots of most of our analytic expressions for the cross sections are available\textsuperscript{2}. Elastic scattering of non-identical particles is modeled 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\textsubscript{α} and the uv continuum versus distance and pressure are compared with experiments\textsuperscript{3,4}. Calculated ion and fast neutral fluxes at the cathode will be compared with calculations using Monte Carlo methods\textsuperscript{5}.

\textsuperscript{3}H.A.M. Blasberg and F.J. de Hoog, Physica \textbf{54}, 468 (1971).

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