



Séminaire du LCPMR

Mardi 30 Juin à 16 heures

Amphithéâtre Jean Perrin

Statistical Theory of Low-Energy Reactive Collisions of N^+ Ions with H_2 , D_2 , and HD Molecules

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We shall present a statistical model of reactive collisions involving N^+ ions in the $^3P_{ja}$ state with H_2 , D_2 , and HD molecules in rotation level j of the ground vibration state, leading to either the reaction products $H + NH^+$, $D + ND^+$, and $D + NH^+$ or $H + ND^+$.

Unlike previous theoretical work, the fine-structure states of the N^+ ions are treated on an equal footing with other internal motions. The calculated cross sections for a given ion energy are averaged over a thermal distribution of initial fine-structure states of N^+ for a temperature of 300 K and over a thermal distribution of both the internal rotation states and translation energy of H_2 , D_2 , and HD for temperatures of 305 and 105 K in order to facilitate a comparison with experiment. The results will be presented for a range of collision energies from 10 meV to 1 eV.