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Reactive collisions of H^+ with D_2 described by statistical model based on mean isotropic potential[1] TASKO GROZDANOV, Institute of Physics, University of Belgrade, RONALD MCCARROLL, Universite Pierre et Marie Curie — At low collision energies, the reaction of H^+ with D_2 leading to the formation of HD takes place via the formation of a collision complex. In this contribution, this process is analyzed for a range of collision energies form threshold up to 1.3 eV using a statistical theory based on a mean isotropic potential deduced from a full potential energy surface. The only input consists of the capture probabilities from various channels and they can be calculated by using a simple classical over-barrier capture model. Calculated integral cross sections, opacity functions and rotational distributions of the HD products are compared with recent statistical and quantum mechanical calculations performed using a full potential energy surface. Reasonable agreement between the results obtained using the two statistical methods is found, both of which however, overestimate the quantum mechanical predictions. The effects due to the presence of identical particles are also discussed.

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