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Charge Transfer in Collisions between Molecular Ions and Atomic Hydrogen/Deuterium¹ V.M. ANDRIANARIJAONA, Department of Physics, Pacific Union College, Angwin CA 94508, USA, I.N. DRAGANIC, Physics Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, USA, D.G. SEELY, Department of Physics, Albion College, Albion, MI 49224, USA, C.C. HAVENER, Physics Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, USA — Using the Oak Ridge National Laboratory ion-atom merged-beams apparatus, absolute cross sections of direct and dissociative charge transfer (CT) between H/D and different molecular ions $(D_2^+, CO^+, and O_2^+)$ are measured from 20 eV/u to 2 keV/u collision energies. Toward high energy where the differences in Q-value of the reaction can be neglected and the rovibrational modes can be considered as frozen, the measured cross sections for the diatomic ions all converge to $(7 \pm 0.5) \ge 10^{-16}$ cm^2 at 2 keV/u and are consistent with a rovibrational frozen (H₂⁺, H) calculation (Physical Review A 84, 062716, 2011). Below one keV/u collision energy, the measured cross sections exhibit trends which are compared to previous merged-beams measurements of CT with H for atomic ions with a variety of electrons on the core.

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