Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Measurements of the Absolute Cross Sections of Charge Transfer for the (D_2^+, D) System Using a Merged-Beams Technique[1] R.A. STROM, K.G. BACANI, R.M. CHI, S.L. HECZKO, B.N. SINGH, J.A. TOBAR, A.K. VASSANTACHART, V.M. ANDRIANARIJAONA, Department of Physics, Pacific Union College, Angwin, CA 94508, D.G. SEELY, Department of Physics, Albion College, Albion, MI 49224, C.C. HAVENER, Physics Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, USA — $(H_2\text{-}H)^+$ and $(D_2\text{-}D)^+$ are the most fundamental ion-molecule two-electron systems. These are temporary complexes which are formed during charge transfer (CT) collisions between the molecular ion and neutral atom. Using the Oak Ridge National Laboratory ion–atom merged–beams apparatus, absolute cross sections of (CT) between D_2^+ and D are measured from 10 eV/u to 1 keV/u collision energies. The results are consistent with the other measurements on CT between different molecular ions such as D_2^+, CO^+, and O_2^+ and H(D) which all converge to (7 $\pm$ 0.5) x 10^{-16} cm^2 at 2 keV/u (Phys. Rev. A **84**, 062716, 2011). Toward the lower energies, they are also in good agreement with our previous measurements for D_2^+ + H, which benchmark high energy theory and vibrationally specific adiabatic theory (J. Phys. Conf. Ser. **194**, 082018,2009).

[1]Research supported by the NASA Solar & Heliospheric Physics Program NNH07ZDA001N, and the Office of Fusion Energy Sciences and the Division of Chemical Sciences, Geosciences, and Biosciences, Office of Basic Energy Sciences of the U.S. Department of Energy. VA et al. is supported by the National Science Foundation through Grant No. PHY-106887.

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Date submitted: 25 Jan 2013 Electronic form version 1.4