## Abstract Submitted for the DAMOP14 Meeting of The American Physical Society

Analysis of the Absolute Cross Section of Charge Transfer Collisions in  $H+H_2^+$  and Isotopic Systems using Merged-Beams Technique<sup>1</sup> V.M. ANDRIANARIJAONA, K.G. BACANI, S.L. HECZKO, R.A. STROM, Department of Physics, Pacific Union College, Angwin, CA 94508, USA, D.G. SEELY, Department of Physics, Albion College, Albion, Michigan 49224, USA, C.C. HAVENER, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6372, USA — We are reporting the absolute charge transfer cross sections for  $H+H_2^+$  and isotopic systems, which were measured with the Oak Ridge National Laboratory Multicharged Ion Research Facility from keV/u collision energies where the collision is considered "ro-vibrationally frozen" to meV/u energies where collision times are long enough to sample vibrational and rotational modes. The charge transfer of these systems involve the most fundamental ion-molecule twoelectron system  $(H-H_2)^+$ . This temporary complex, formed during charge transfer collisions of  $H+H_2^+$ , proceeds through dynamically coupled electronic, vibrational, and rotational degrees of freedom (J. Phys. Conf. Ser. **194** 012043(2009)). The measurements reported here are compared to the existing high energy theory and low energy state-to-state calculations (NIM B **235** 362 (2005), PRA **67** 022708 (2003), and PRA 66, 042717(2002)).

<sup>1</sup>This research is supported by the Office of Fusion Energy Sciences and the Division of Chemical Sciences, Geosciences, and Biosciences, Office of Basic Energy Sciences, US Department of Energy, the National Science Foundation under Grant No. PHY-106887

Vola M. Andrianarijaona Department of Physics, Pacific Union College, Angwin, CA 94508, USA

Date submitted: 28 Jan 2014

Electronic form version 1.4