Abstract Submitted for the DAMOP06 Meeting of The American Physical Society

Reactions of Protons and Hydrogen at Electron-volt Energies.¹ A.G. CALAMAI, S.M. BREWER, J.C. GLEESON, B.W. MYER, L.M. REYNOLDS, R.J. STAMILIO, A.N. DAW, Appalachian State University, M. SCHNELL, D.W. SAVIN, Columbia University — We combined a simple time-offlight (TOF) mass spectrometer in tandem with a cylindrical rf ion trap to monitor the temporal evolution of an ion population as it reacts with a neutral gas buffer following an electron impact interval which is used to create the ions. At precisely determined times following electron impact, the stored ions are extracted from the trap into an 82-cm flight path terminated by an active-film detector. As chargeexchange (CX) reactions typically dominate ion losses from the trap for neutral gas pressures $\geq 10^{-9}$ Torr, an analysis of the TOF spectra as a function of the extraction time and neutral gas pressure will yield the relevant CX collision-rate coefficient. Initial measurements are being carried out using H⁺ and H₂. A discussion of the apparatus, data associated with the reaction, and systematic issues associated with these measurements will be presented.

¹Supported in part by NSF Grant No. AST-04-06706 to ASU and, for DWS and MS, NASA Grant No. NAG5-5420 and NSF Grant No. AST-03-07203 to CU, respectively.

Anthony G. Calamai Appalachian State University

Date submitted: 27 Jan 2006

Electronic form version 1.4