

Abstract Submitted
for the SES17 Meeting of
The American Physical Society

Progress Towards Charge Exchange with Highly Charged Ions¹

DANIEL FOX, Clemson Univ, STEVE BROMLEY, CHAD SOSOLIK, JOAN MARLER, Clemson University — Highly charged ions (HCIs) are an integral component of atomic and molecular physics, in part because their compressed size and strong electric fields make them relevant to various areas of study, including quantum electrodynamics (QED). In addition, HCIs are often formed in conditions of extreme temperature or pressure, such as those found in astrophysics. These characteristics of HCIs increase the difficulty of HCI production in a laboratory setting compared to singly charged ions or neutral atoms, making HCIs less explored than other phenomena. Using HCIs created at the Clemson University Electron Beam Ion Trap (CUEBIT), we will study interactions between highly charged ions and neutral particles. A gas cell has been constructed in order to measure charge exchange cross-sections of these interactions. Results from measurements made with the gas cell will be presented along with ideas for further development of the system. These studies on HCIs will assist in studies pertaining to QED and astrophysics, and will also result in additional understanding of the structure and nature of HCIs themselves.

¹EPSCoR/IDeA program

Daniel Fox
Clemson Univ

Date submitted: 11 Oct 2017

Electronic form version 1.4