

Abstract Submitted  
for the DAMOP15 Meeting of  
The American Physical Society

**Search for radiative double electron capture (RDEC) by fully-stripped ions in gas targets**<sup>1</sup> NUWAN KUMARA, Western Michigan University, ANNA SIMON, University of Notre Dame, DAVID LA MANTIA, ASGHAR KAYANI, JOHN TANIS, Western Michigan University — Radiative double electron capture (RDEC) by fully-stripped ions in collisions is a fundamental atomic process that can be used to study the electron-electron interaction. This is a one step process in which a single x-ray is emitted in association with the capture of two electrons to a bare projectile from the target. Only five attempts have been made since 1995 to observe RDEC and only one experiment (2.38 MeV/u O<sup>8+</sup> collision on a C foil) successfully reported positive results for the observation of the process.<sup>2</sup> We have started new measurements at WMU for gas targets (He, Ne and N<sub>2</sub>) as well as a thin-foil C target with fully-stripped fluorine to compare the results with previous experiments and theoretical calculations. Gas targets are contaminant free compared to solid targets and the measurements have been started for gaseous N<sub>2</sub>. This experiment is difficult and requires long counting times due to the relatively small RDEC cross compared to that for the single electron process of radiative electron capture.

<sup>1</sup>Supported in part by the NSF.

<sup>2</sup>A. Simon et al., PRL **104**, 123001 (2010).

Nuwan Kumara  
Western Michigan University

Date submitted: 29 Jan 2015

Electronic form version 1.4