

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Cold Rydberg atom collisions in a dipole trap¹ JADER CABRAL, LUIS GONÇALVES, JORGE KONDO, LUIS MARCASSA, Universidade de São Paulo — We have built a new experimental setup to investigate cold Rydberg atom collision in a high atomic density sample in a CO₂ dipole trap. Briefly, we load a Rb standard magneto-optical trap from an atomic vapor provided by a dispenser. Then we turn on 100W CO₂ dipole trap and we apply a loading phase, in which the repumper light intensity is reduced. After this phase, the trapping and repumper laser beams are turned off and we wait 100ms for the atoms that were not trapped to fall off the dipole trap region due to gravity. Finally, we turn off the dipole trap and excite the Rydberg state using a two photon transition. The Rydberg atoms are detected using pulsed field ionization technique. In this new setup, we can image the ions onto a MCP detector to study the spatial distribution. The electrons maybe detected also by another MCP. During the presentation we shall present preliminary results involving the excitation of nD+nD states.

¹We acknowledge financial support from FAPESP, CNPq, INCT-IQ, AFOSR (FA9550-09-1-0503)

Luis Marcassa
Universidade de São Paulo

Date submitted: 27 Jan 2011

Electronic form version 1.4