

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Electron-Atom Interaction and Optogalvanic Dynamics in a Hollow Cathode Discharge Plasma Around 659.9nm¹ KAYODE OGUNGBEMI, PRABHAKAR MISRA, Howard University — Our study focuses on the rate of ionization of neon in a hollow cathode discharge lamp irradiated with a pulsed laser whose wavelength (659.9 nm) is in resonance with the neon transition. Changes in ionization rates were observed as a function of current variation across the lamp electrodes, thus enabling the atomic – electron collisional processes within the plasma to be characterized. A mathematical model was developed to fit the optogalvanic waveforms for the $1s_5 - 2p_2$ neon transition at 659.9 nm and determine the instrumental time constant and exponential rate parameters in order to better understand the atom-electron interactions and the dynamics of the discharge plasma.

¹I gratefully acknowledge financial support from the Graduate School of Arts and Sciences in the form of Graduate Teaching Assistantship.

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Date submitted: 20 Jan 2009

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