SEMINAR NOTICE

Department of Physics and Engineering Physics
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SPEAKER: Mina Papahn Zadeh, PhD Candidate,
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TOPIC*:* *Azimuthal Fluctuations and Structures in* $\boldsymbol{E_x B}$ *Penning Discharge.*

DATE: Tuesday March 25th, 2025

TIME: 3:30-4:30 p.m.

PLACE: ***Physics 103***

Abstract:

Magnetically enhanced plasma discharges are widely used in industry and advanced technologies. Partially magnetized plasmas—where electrons are strongly confined by magnetic fields and ions are controlled by electric fields—enable applications such as semiconductor manufacturing, ion implantation, and materials processing.
However, the physics of fluctuations and anomalous transport in these systems remains poorly understood, limiting further development. This work focuses on realistic simulations that include ionization processes, aiming to characterize and control plasma instabilities and oscillations for improved device performance.
In this talk, I will present the basic mechanisms of plasma confinement in partially magnetized $\boldsymbol{E}\times\boldsymbol{B}$ configurations. I will also discuss the methodology of kinetic numerical simulations used to capture the complex nonlinear dynamics in these plasmas. Finally, results from two- and three-dimensional simulations will be presented, with a focus on investigating azimuthal and axial fluctuations.

Coffee and Cookies available in Physics 177 lounge at 3:00pm to those attending the seminar.