Contribution ID: **83** Type: **poster**

Exploring Line Shapes in Fusion Plasmas under the Influence of Periodic Electric Fields

Tuesday, 16 July 2024 16:10 (1h 30m)

The impact of varying periodic electric fields on the emission line shapes in fusion plasmas, is a subject of significant interest. Tokamak devices, universally employing radio frequency (rf) waves, aim to heat, control, or diagnose plasma through effective coupling. This research focuses on developing a spectroscopic diagnostic tool to analyze the periodic electric field's propagation within the plasma, essential for understanding rf wave-plasma interactions. Additionally, it explores diagnostics for periodic fields generated by nonthermal effects and instabilities, such as those induced by runaway electrons, which influence wave generation in a tokamak. An early detection mechanism for runaway electrons, crucial for the ITER project, is proposed through spectroscopic diagnostics. This study intends to simulate the oscillating electric field's impact on emission line shapes, incorporating the dynamics of charged particles, the oscillating field, and a constant magnetic field. We will present hydrogen line shapes under various fusion plasma conditions, as observed in several experimental fusion devices.

Primary author: HANNACHI, Ibtissem (PRIMALAB, Department of physics, University of Batna 1)

Co-author: Prof. STAMM, Roland (PIIM, Aix-Marseille University)

Presenter: HANNACHI, Ibtissem (PRIMALAB, Department of physics, University of Batna 1)

Session Classification: Poster session