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## Simulation of Bremsstrahlung emission in ECRIS and its dependence on the magnetic confinement

*Tuesday, September 17, 2024 2:00 PM (30 minutes)*

A Monte Carlo (MC) code dedicated to the electron dynamics in ECRIS was recently completed with a new functionality, allowing to simulate Bremsstrahlung photon emission from the volume interaction of electrons with charged particles inside the plasma. The simulation qualitatively reproduces the experimental anisotropy of the photon spectral temperature previously reported. The effects of variations in the magnetic field minimum  $B_{min}$  and in the extraction peak on both the electron energy distribution function and the Bremsstrahlung emission are also investigated and reported. The simulation results confirm that only changes in  $B_{min}$  influences the hot energy tail of the EEDF \*. The MC high electron statistics allows studying with unprecedented details the location and mechanism responsible for the hot electrons generation in ECRIS, highlighting the crucial role of  $B_{min}$  in this process.

### Footnotes

- J. Benitez, C. Lyneis, L. Phair, D. Todd, and D. Xie, IEEE Transactions on Plasma Science 45, 1746 (2017).

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