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TrapCAD Modelling and EEDF Studies of ECR Source with New Magnetic Topology

A 10GHz ECR ion source (PK-GANESA) with a new magnetic topology has been developed in a GANIL - Pan-technik collaboration [1]. The performance of this source has been analyzed through simulations of electrons prior to collisions for 20 μ s using TrapCAD. The EEDF obtained from the simulations has been characterized with respect to radio-frequency, heating power, and simulation time. These results have been compared to a more traditional 10GHz ECRIS (NANOGAN3) [2] present at GANIL with simulation parameters normalized to electron density. The simulation results have demonstrated an improvement of electron confinement (~10 times) with increasing RF heating. This contribution will deal with the results obtained from the simulations and their implications with regard to the PK-GANESA source.

[1] P. Salou et al., AIP Conference Proceedings 2011, 040021 (2018)

[2] A.C.C. Villari et al., Nuclear Instruments and Methods in Physics Research B I26 (1997)

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