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Negative Ion Studies in an IEC Fusion Device[1] E.C. ALDERSON, J.F. SANTARIUS, G.A. EMMERT, G.L. KULCINSKI, University of Wisconsin — Understanding of negative ions in Inertial Electrostatic Confinement (IEC) fusion devices has made substantial progress since their discovery [1]. Modeling of negative ion formation and energy spectrum evolution has been undertaken by incorporating a negative ion physics module in a 1-D integral transport simulation of an IEC device [2]. Study of negative ion current focusing by the IEC device electrostatic potential structure has been undertaken by measuring the negative ion current azimuthal profile about the equator of the IEC device at various radii. This data set also allows for an extrapolation of total negative ion current produced in an IEC device at the studied parameters.

[1] D.R. Boris, et al., Phys. Rev. E. 80, 036408 (2009).
[2] G.A. Emmert and J.F. Santarius, Phys. Plasmas 17, 013503 (2010).

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