Abstract Submitted
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Modeling plasma transport across the magnetic filter of the ITER negative ion source[1] G.J.M. HAGELAAR, F. GABORIAU, G. FUBIANI, B. CHAUDHURY, J.P. BOEUF, LAPLACE, CNRS and Univ Toulouse — This presentation gives an overview of numerical modeling work at LAPLACE Toulouse on the negative filter operation of the ITER negative ion source developed at IPP Garching [U. Fantz et al, Rev. Sci. Instrum. 79, 02A511 (2008)]. The magnetic filter separates the source driver region (where plasma is produced by an inductive RF discharge) from the low electron temperature region in front of the extraction grids (where negative ions are produced and extracted from the plasma). The plasma transport across the filter is a key issue for the source performance. Both fluid and particle-in-cell models have been developed in order to improve fundamental understanding of this transport. The models demonstrate the dominant role of magnetic drift, increasing the cross field transport and inducing asymmetry in the plasma. Plasma instabilities are also observed but presumably do not contribute significantly to the cross field transport. A dedicated experimental set-up is under construction in order to obtain additional data to test and validate the models.

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G.J.M. Hagelaar
LAPLACE, CNRS and Univ Toulouse

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