



Contribution ID: 65

Type: Poster

On the Effect of Biased Surfaces in the Vicinity of the Extraction Area at the Large RF Driven Negative Ion Source at the ELISE Test Facility

The ion source at the ELISE test facility is an intermediate step towards the operation of the ITER source and demonstrates fulfillment of the ITER NBI requirements in hydrogen (H). However, in deuterium (D) operation the co-extracted electron current (I_e) is higher and limits the source performance. In the standard setup of ELISE, I_e is reduced by a positive potential applied to the plasma grid (PG) with respect to the source body and the bias plate (BP). To further reduce and stabilize I_e in D, alternative schemes by biasing the BP are investigated. Measurements of the BP currents and of the extracted currents, combined with probe diagnostics in the vicinity of the PG for D operation and short pulses are presented. Biasing the BP, leads to a change in the distribution of the plasma potential in front of the extraction area, affecting the charged particle fluxes towards the BP and the PG and a reduction of I_e . This gives an outlook for stabilizing I_e of the ITER NBI systems.

E-mail for contact person

dimitar.yordanov@ipp.mpg.de

Funding Information

This work has been carried out within the framework of the EUROfusion Consortium and has received funding from the Euratom research and training programme 2014-2018 and 2019-2020 under grant agreement No 633053. The views and opinions expressed herein do not necessarily reflect those of the European Commission.

Primary author: YORDANOV, Dimitar (Max-Planck Institute for Plasma Physics)

Co-authors: WÜNDERLICH, Dirk (IPP Garching); WIMMER, Christian (Max-Planck-Inst. f. Plasmaphysik); FANTZ, Ursel (Max-Planck-Institut for Plasma Physics)

Presenter: YORDANOV, Dimitar (Max-Planck Institute for Plasma Physics)

Session Classification: Poster Session 1

Track Classification: Ion sources for fusion