



Contribution ID: 87

Type: Poster

## Study of the Charged Particle Flow near the Plasma Grid in Negative Ion Source

Negative ion beams of hydrogen (H) and deuterium (D) are applied for heating and current drive in fusion plasmas as neutral beam injection. Comparing with H, the extraction of  $D^-$  ion beam accompanies higher co-extracted electron current. It is expected that the higher electron current is originated with the flow of electrons toward a plasma-grid (PG) aperture in the source plasma. Additionally, the electron flow related to the higher positive-ion flow in the D plasma through ambipolar diffusion from the driver toward the beam extraction region.

In this study, the charged particle flow is measured in H and D plasmas with a single-tip directional Langmuir probe. The results of the positive ion flow in the D plasma in the extraction region showed similar flow direction in the H plasma and lower flow speed than that obtained in the H plasma. Both the flow direction and speed changed as the PG bias voltage was varied. The dependence of the flow on the bias voltage will be discussed.

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### Funding Information

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**Session Classification:** Poster Session 2

**Track Classification:** Ion sources for fusion