Contribution ID: **130**   Type: **Parallel Session (Contributed Oral) talk**

Towards the Optimization of the Cs Evaporation Configuration for Long Pulse Operation of Negative Ion Sources

Friday, 24 September 2021 09:40 (20 minutes)

Negative ion sources for neutral beam injection rely on surface production of negative ions on a caesiated low work-function surface (plasma grid). To maintain the low work function in long pulses (one hour) and the desired source performance (extracted H-/D- ions and limited co-extracted electrons), Cs needs to be constantly delivered onto the plasma grid. The CsFlow3D code was applied to the ELISE source to simulate the evaporation and the plasma-assisted redistribution of Cs. The Cs flux stability is investigated for consecutive one hour plasma pulses and compared with experiments. Three methods to optimize the Cs evaporation are simulated: by adjusting position and orientation of the Cs evaporator and by using a distributed Cs evaporation concept, either on the back-plate of the source or close to the plasma grid. An increase of the Cs flux occurs for all three methods, while the best control and lowest Cs consumption is obtained by the direct evaporation close to the plasma grid.

E-mail for contact person

alessandro.mimo@ipp.mpg.de

Funding Information

Primary authors: MIMO, Alessandro (Max-Planck-Institut für Plasmaphysik); WIMMER, Christian (Max--Planck-Inst. f. Plasmaphysik); WÜNDERLICH, Dirk (IPP Garching); FRÖSCHLE, Markus (Max-Planck-Inst. f. Plasmaphysik); FANTZ, Ursel (Max-Planck-Institut for Plasma Physics)

Presenter: MIMO, Alessandro (Max-Planck-Institut für Plasmaphysik)

Track Classification: Ion sources for fusion