

Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Numerical study of neutral beam injection heating in the HSX stellarator LANCE HENNING, MICHAEL GERARD, BENEDIKT GEIGER, SANTHOSH KUMAR, None — Neutral beam injection (NBI) is a key component to achieve high ion temperatures in small scale fusion experiments since this allows direct ion heating. The installation of a new NBI source is therefore foreseen at the Helically Symmetric Experiment (HSX) in UW Madison. Here we present a numerical study using the FIDASIM code and a newly developed orbit following code to determine suitable NBI injection geometries. FIDASIM is used to calculate fast-ion birth positions for various NBI geometries and fast ions are then followed through the 3D magnetic field structure of HSX using the orbit following code. This allows determining the radial distribution of the injected fast ions such that analytic formulas can be used to compute electron and ion heating profiles. Through the use of these computational tools, suitable NBI geometries will be presented that minimize fast-ion losses and promote efficient heating.

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None

Date submitted: 02 Jul 2020

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