

Abstract Submitted
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Two-point Analysis of SOLPS Modeling for a Slot Divertor¹ P.C. STANGEBY, U. Toronto, J.M. CANIK, ORNL — Two-Point Modeling, 2PM, is used to verify and quantify SOLPS code analysis of a narrow slot divertor configuration for a Fusion Nuclear Test Facility based on the Advanced Divertor concept, FNSF-AT [1]. The conventional 2PM includes free parameters, the power and momentum loss factors, $f_{pwr-loss}$, $f_{mom-loss}$. Kotov and Reiter showed that the 2PM is exact in the framework of the equations solved by the B2 code when $f_{pwr-loss}$ and $f_{mom-loss}$ are computed from the B2 code output [2]. An approximation of this procedure is applied here to the SOLPS analysis for FNSF-AT. As the “upstream” density at the outside midplane separatrix, n_u , is increased from $4.8e19$ to $8.4e19$ m^{-3} , the value of T_{e-OSP} at the outer strike point drops from 70 to 2 eV while n_{e-OSP} increases from $2E20$ to $2E21$ m^{-3} . Over this range of conditions the 2PM values of T_{e-OSP} were found to be within a factor of 2 of the SOLPS values. The relative roles of power and momentum loss are discussed.

[1] Garofalo et al, Nucl. Fusion 54 (2014) 073015.

[2] Plasma Phys. Control. Fusion 51 (2009) 115002.

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