

Abstract Submitted
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A Sensitivity Analysis of SOLPS Plasma Detachment¹ D.L. GREEN, J.M. CANIK, ORNL, D. ELTON, PPPL, O. MENEGHINI, General Atomics, ATOM SCIDAC COLLABORATION — Predicting the scrape off layer plasma conditions required for the ITER plasma to achieve detachment is an important issue when considering divertor heat load management options that are compatible with desired core plasma operational scenarios. Given the complexity of the scrape off layer, such predictions often rely on an integrated model of plasma transport with many free parameters. However, the sensitivity of any given prediction to the choices made by the modeler is often overlooked due to the logistical difficulties in completing such a study. Here we utilize an OMFIT [1] workflow to enable a sensitivity analysis of the midplane density at which detachment occurs within the SOLPS [2] model. The workflow leverages the TaskFarmer technology developed at NERSC to launch many instances of the SOLPS integrated model in parallel to probe the high dimensional parameter space of SOLPS inputs. We examine both predictive and interpretive models where the plasma diffusion coefficients are chosen to match an empirical scaling for divertor heat flux width or experimental profiles respectively. [1] O. Meneghini et al., Nucl. Fusion 55, 083008 (2015) [2] R. Schneider et al., Contrib. Plasma Phys. 46: 3-191 (2006)

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