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Predictive modeling of SPARC divertor conditions using SOLPS-ITER[1] JEREMY LORE, J.M. CANIK, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA, A.Q. KUANG, B. LABOMBARD, Plasma Science and Fusion Center, MIT, Cambridge, MA 02139, USA, B. LIPSCHULTZ, York Plasma Institute, University of York, Heslington, York, YO10 5DD, UK, M.L. REINKE, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA — The SOLPS-ITER code [1] is used to predict divertor conditions and study particle balance and impurity seeding for the SPARC tokamak [2,3]. The simulations use the V2 plasma facing component geometry with a double null magnetic topology biased towards the lower divertor along with 29 MW of boundary input power and a separatrix electron density of 1x1020 m-3. Cross-field diffusivities are selected to approximately reproduce the design guideline heat flux width of ˜0.18 mm at the outboard midplane. Under these conditions the flux to the outer target, with peak heat flux density of ˜180MW/m2, necessitates mitigation from strike point sweeping or dissipation from impurity species. In the case of tungsten divertor material extrinsic neon seeding is considered, with additional intrinsic sputtering included in the case of carbon divertors. The simulations are used to inform requirements on fuel ion and impurity flow rate, optimal puff locations, and pumping requirements. [1] Bonnin, X., et al Plasma Fusion Res. 11, 1403102 (2016). [2] Creely, A., et al, Submitted to J. Plasma Phys. [3] Kuang, A.Q. Submitted to J. Plasma Phys

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