

Abstract Submitted
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Benchmarking Results for High-Performance Simulations of Plasma Facing Components with Xolotl¹ JAY JAY BILLINGS, Oak Ridge National Laboratory, PSI-SCIDAC TEAM — Predicting the operational lifetime and performance of Plasma Facing Components (PFCs) for magnetically-confined fusion devices is critical to the deployment of future commercial fusion reactors beyond ITER and DEMO. The difficulty of this task can be partially eased by developing high-performance computing tools to simulate the PFCs in a tokamak environment. We present on-going work on a new, high-performance simulator for PFCs, named Xolotl, that considers the material evolution in the divertor with cluster dynamics. We will describe a set of benchmark problems that we have developed for this problem in tungsten and iron and compare Xolotl's results. We will also briefly describe the governing reaction-diffusion equations solved by Xolotl, its dependence on the dilute limit for clusters and the reactions it considers.

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