Abstract Submitted
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Particle and heat flux measurements from XGC1 simulations: Spatial patterns and SOL width implications.[1] IOANNIS KERAMIDAS CHARIDAKOS, University of Colorado at Boulder, JAMES MYRA, Lodestar Research Corporation, SCOTT PARKER, University of Colorado at Boulder, SEUNG-HOE KU, JUGAL CHOWDHURY, MICHAEL CHURCHILL, ROBERT HAGER, CHOONG-SEOCK CHANG, Princeton Plasma Physics Laboratory — Strong turbulence near the separatrix is believed to produce filamentary structures (blobs), whose detachment from the bulk can account for the intermittent nature of edge turbulence and impact the heat flux width. The SOL width is a parameter of paramount importance in modern tokamaks as it controls the amount of power deposited at the divertor plates, directly affecting thus the viability of fusion. Here, we analyze the results of simulations performed with the full-f, gyrokinetic code XGC1 which includes both turbulence and neoclassical effects in realistic divertor geometry. More specifically, we calculate the integrated particle and heat fluxes across the separatrix and present their spatial pattern. The flux is impacted by neoclassical effects and ExB turbulent-blobby motion. We isolate the ExB turbulent flux and estimate its contribution to the SOL width. Furthermore, we offer an interpretation of the observed patterns, tying them to the sheared perpendicular and parallel flows.

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