Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Blob-Filament characteristics in XGC1 simulations and implications for the SOL width[1] IOANNIS KERAMIDAS CHARIDAKOS, University of Colorado, Boulder, JAMES MYRA, Lodestar Research Corporation, SCOTT PARKER, University of Colorado, Boulder, SEUNG-HOE KU, JUGAL CHOWDHURY, RANDY CHURCHILL, ROBERT HAGER, CHOONG-SEOCK CHANG, Princeton Plasma Physics Lab — Blob-filament structures, formed due to plasma stratification, caused by strong turbulence near the separatrix, have been believed to be responsible for the convective transport at the SOL. Detachment of those coherent structures from the bulk can account for the intermittent nature of edge transport and their dynamics 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. So far, studies of blobs have been confined to reduced fluid models and simplified geometries, leaving out important pieces of physics. Here, we analyze the results of simulations performed with the full-f, gyrokinetic code XGC1 which includes both turbulence and kinetic neoclassical effects in realistic divertor geometry. The blob contribution to the SOL width is estimated from examining the radial blob velocity and the parallel confinement time.

[1]We acknowledge computing resources on Titan at OLCF through the 2015 INCITE and the 2016 ALCC awards. Work supported by the U.S. Department of Energy Office of Science, Office of Fusion Energy Sciences under Award Number DE-FG02-97ER54392.

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Date submitted: 14 Jul 2016 Electronic form version 1.4