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Effect of magnetic chaos on particle Transport in the SOL DMITRY MEYERSON, Institute for Fusion Studies, The University of Texas at Austin, CRAIG MICHOSKI, Institute for Computational Engineering & Sciences, The University of Texas at Austin, FRANCOIS WAELBROECK, Institute for Fusion Studies, The University of Texas at Austin — A large body of experimental and theoretical evidence has shown that particle transport in the SOL is dominated by the convection of long-lived, rapidly propagating plasma filaments called blobs in reference to the shapeless nature of their mid-section. Here, we use the BOUT++ code [1] to investigate how resonant magnetic perturbations in the boundary between closed and open flux surfaces change macroscopic observables such as the SOL width. We use a Poincare field-line mapping as a computationally economical way to introduce 3D effects into what is otherwise a series of 2D simulations. We consider a map that models the effect of field-line chaos on the connection length in the region connecting outer portions of the pedestal and the SOL. We will examine the variation of experimentally relevant quantities such as the SOL gradient length scale and intermittency of the particle flux in the SOL as we change the strength and the mode structure of the magnetic perturbation. We will also describe variation in the observational statistics of the density fluctuations with in this region.

 B. D. Dudson, M. V. Umansky, X. Q. Xu, P. B. Snyder, and H. R. Wilson, Computer Physics Communications 180, 1467-1480 (2009).

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