Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Reduced model (nSOLT) turbulence simulations of neutral-plasma interaction in the SOL[1] DAVID RUSSELL, JAMES MYRA, Lodestar Research Corporation (United States), FULVIO MILITELLO, DAVID MOULTON, CCFE — The 2D scrape-off-layer turbulence code (nSOLT) includes neutral-plasma interactions; a Boltzmann equation describes the evolution of the bi-normally (y) averaged neutral distribution function, $G(x, v_x, t)$, in the radial dimension, and neutral-plasma interactions are mediated by charge-exchange and ionization rates based on poloidally-averaged plasma density and temperature. The code has been verified in comparisons with the Monte Carlo neutral transport code DEGAS 2 [1]. Recent modifications of nSOLT will be described, including (i) an updated convective transport algorithm and (ii) the addition of a spatially distributed source of neutrals for modeling diverter recycling. For MAST-U-like parameters, equilibrium and turbulence simulations with self-consistent neutral and plasma profiles will be discussed. [1] D.A. Russell, J.R. Myra and D.P. Stotler, Phys. Plasmas **26**, 022304 (2019).

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Date submitted: 02 Jul 2019   Electronic form version 1.4