

Abstract Submitted
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L-H transitions driven by ion heating in scrape-off layer turbulence (SOLT) model simulations¹ D.A. RUSSELL, D.A. D'IPPOLITO, J.R. MYRA, Lodestar Research Corporation — The original SOLT model now includes the evolution of ion pressure consistent with drift-ordering. It is a two-dimensional, electrostatic reduced model wherein closure relations, obtained by integrating the equations along the B-field, model parallel physics that includes sheath-mediated current and heat flux in the scrape-off-layer and electron drift waves inside the separatrix. Low (L) and high (H) confinement regimes are observed in SOLT simulations, depending on the strength of an ion pressure (i.e., ion heating) source localized inside the separatrix: With increasing heating, particle and energy confinement times at first decrease in the L-mode then rise in the H-mode. The L-H transition is marked by distinct changes in sheared-flow profiles. The addition of ion pressure dynamics enables modeling the *self-consistent* interaction between the ion diamagnetic drift and the radial electric field (mean and zonal flows). The roles of these sheared flows in mediating the L-H transition are explored. A new diagnostic, based on the density correlation function, is applied to study blob velocities in different regimes.

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