

Abstract Submitted
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SOL density profile formation and intermittent ion fluxes to the first wall in JET¹ NICHOLAS WALKDEN, F MILITELLO, G MATTHEWS, J HARRISON, D MOULTON, EURATOM/CCFE, A WYNN, B LIPSCHULTZ, Univ. York, C GUILLEMAUT, Univ. Lisboa, JET TEAM — The ion flux in the scrape-off layer (SOL) of a tokamak is highly non-diffusive due to the radial propagation of intermittent burst events known as filaments. As a result the formation of mean profiles in the SOL and the flux incident on the outer wall are strongly impacted by transient events. This has been investigated over a series of pulses in an Ohmic L-mode horizontal target configuration in JET. Broadening of the SOL density profile is reduced as plasma current is increased or the density is decreased. The mean and variance of the ion flux at the outer wall change concurrently with this broadening. Upon renormalization the PDFs of the ion flux at the outer-wall collapse indicating universality in the dynamics of their constituent fluctuations. This universality is shown to result from a balance between the duration and frequency of burst events which keeps the intermittency parameter constant. These measurements will be compared to synthetically produced measurements created using a stochastic framework based on filamentary dynamics. Through this comparison possible models of filamentary dynamics will be assessed and compared quantitatively to gain an understanding of the processes underlying density profile formation and fluxes to the outer wall of JET.

¹This work has been carried out within the framework of the EURO- fusion Consortium.

Nicholas Walkden
EURATOM/CCFE

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