Numerical investigation of Scrape Off Layer anomalous particle transport for MAST parameters - DTU Orbit (22/12/2018)

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Numerical simulations of L-mode plasma turbulence in the Scrape Off Layer of MAST are presented. Relevant features of the boundary plasma, such as the thickness of the density layer or the statistics of the fluctuations are related to the edge density and temperature, plasma current and parallel connection length. It is found that the density profile is weakly affected by the edge density, it broadens when the current or the temperature are decreased while the connection length has the opposite effect. The statistics of the turbulence is relatively insensitive to variations of all the edge parameters and show a certain degree of universality. Effective transport coefficients are calculated for several plasma conditions and display a strong nonlinear dependence on the parameters and on the radial variable. Finally, it is shown how the perpendicular particle fluxes in the Scrape Off Layer are related to the edge parameters.

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