

Abstract Submitted
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Impurity Behaviour in the H-mode Edge Barrier: Neoclassical Transport and ELM Flushing T. PUETTERICH, R. DUX, M.A. JANZER, MPI f. Plasmaphysik, EURATOM Association, 85748 Garching, Germany, ASDEX UPGRADE TEAM — In H-mode discharges an edge transport barrier (ETB) exists and steep gradients are observed in density, temperature of electrons, ions and impurities forming an edge pedestal which is briefly but frequently disturbed and degraded by the occurrence of edge localized modes (ELMs). This edge pedestal sets the boundary conditions for the performance of a fusion plasma. In the actual work, the impurity transport in the ETB is measured by CXRS. It is found that the gradients and the dynamics in impurity densities for (He, C, Ne and Ar) are in agreement with neoclassical transport coefficients at the ETB (i.e. small diffusion and inward convection). Furthermore, a model for the ELM cycle was developed, which treats an impurity mix self-consistently, such that for each time step the neoclassical transport is reevaluated according to the actual impurity densities and gradients. For plasma radii inside the ETB turbulent transport is taken into account by additional diffusion. The impurities are expelled by the ELM and then sputter W at the plasma facing components which enters the plasma after losses by prompt re-deposition are taken into account. The model consistently combines the dominant effects into a picture which agrees with the experimental behavior of W in ASDEX Upgrade.

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