AUG results

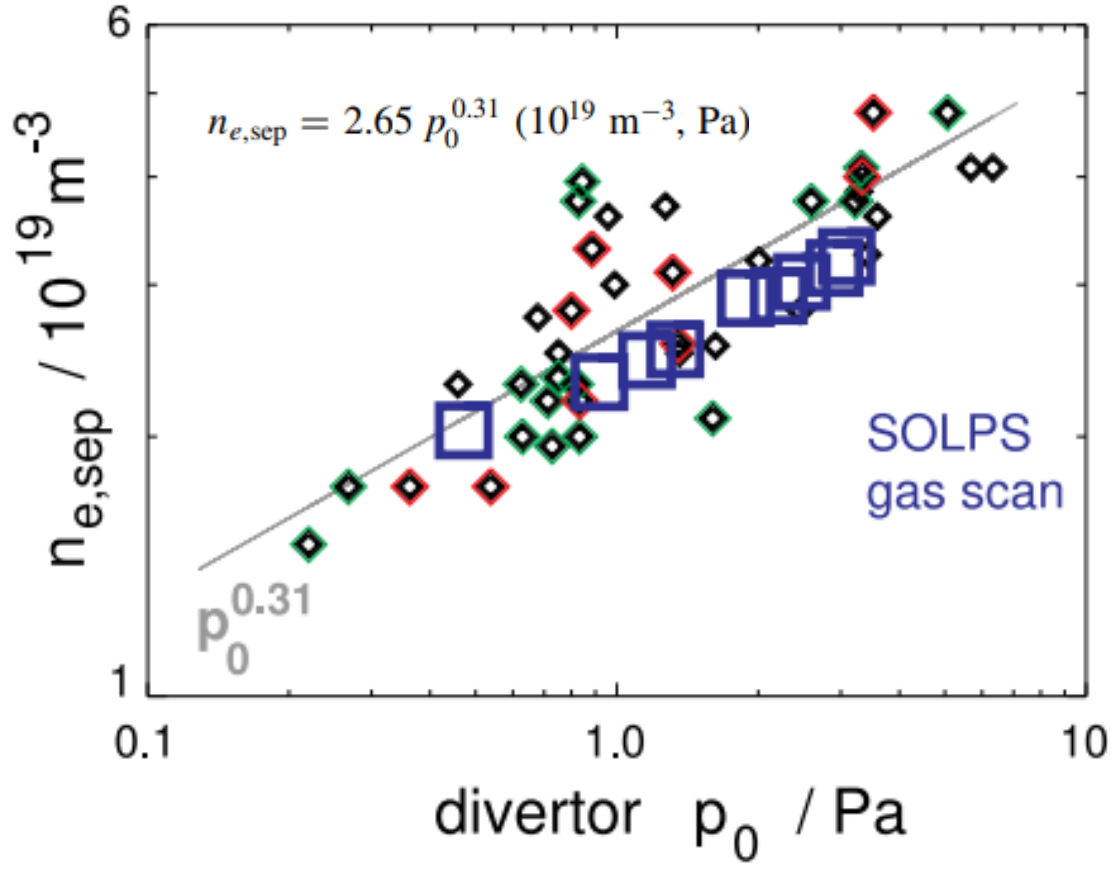

Fig. 6. Measured separatrix densities versus the neutral pressure. The direct fit [7] is also indicated. Results of a SOLPS gas scan in a typical parameter range of the experimental data are shown as blues squares.

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Neutral pressure and separatrix density related models for seed impurity divertor radiation in ASDEX Upgrade

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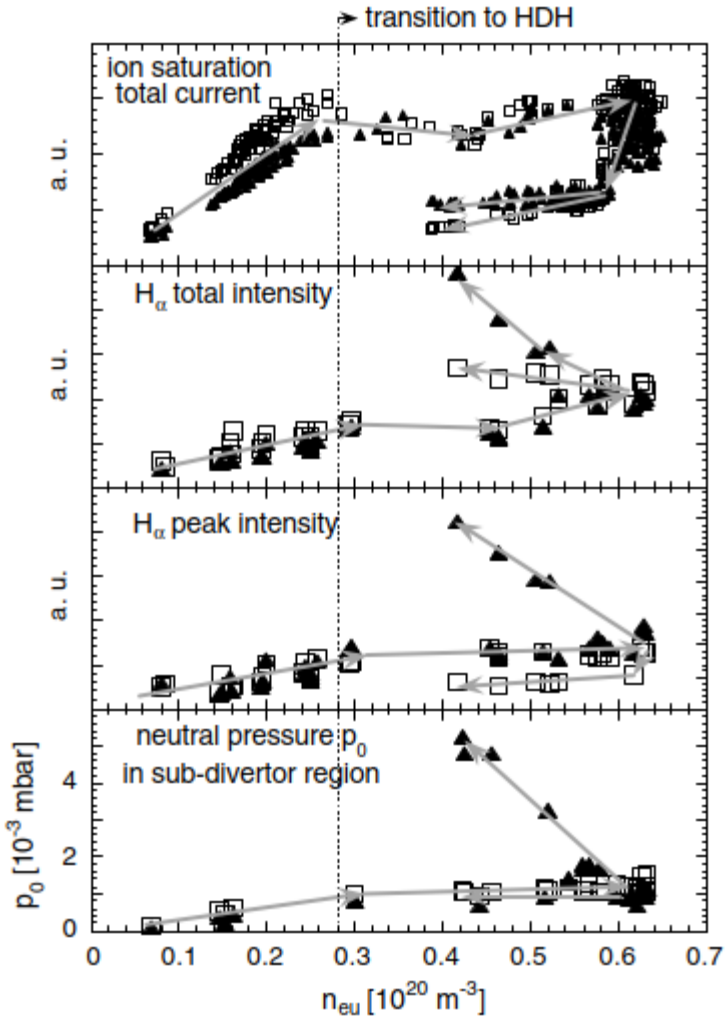
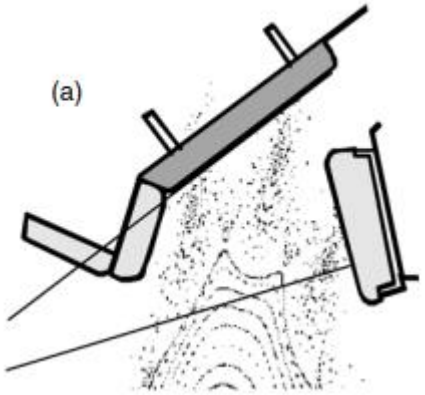
Source: A Kallenbach et al 2018 Plasma Phys. Control. Fusion 60 045006

W7-AS results



SDC, NBI = 1.4 MW.
neutral pressures in the sub-divertor regions at top (solid symbols) and bottom (open symbols) divertors as functions of the upstream electron density. At partial detachment (rollover of n_{eu}), the neutral pressure reflects the courses of the Hα signals. The strong increase during detachment from the top divertor is associated with the occurrence of volume recombination in that region.

A well pronounced high-recycling regime (with n_{ed} strongly exceeding n_{eu} in consequence of pressure constancy along field lines) prior to detachment is not observed in W7-AS.



A considerable loss of parallel momentum in this geometry at T_{ed} values still well above about 5 eV is indicated, where momentum losses due to charge exchange (CX) are not yet effective. EMC3-EIRENE code simulations support this assumption and relate this effect to friction between counter-streaming particle flows within the island SOL as well as cross-field particle and momentum transport into shadowed regions between the discontinuous targets.

Neutral particle densities near the wall outside the divertor regions are typically at about 10^{-4} mbar.

Source: M Hirsch et al 2008 Plasma Phys. Control. Fusion 50 053001 (p.138)