

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Simulations of Standard and X-divertor Edge Plasmas for Reactors J. WILEY, M. KOTSCHENREUTHER, P. VALANJU, S. MAHAJAN, M. PEKKER, IFS U of Texas at Austin, T. ROGNLIEN, LLNL — UEDGE simulations confirm the expected reduction of heat flux by the X-divertor magnetic geometry for partially detached cases. ITER configurations with both the standard divertor and an X-divertor with reactor power levels are compared and despite the complications introduced by the atomic physics, the naive expectation that the thermal flux capability increases with the flux expansion parameter was confirmed. Possible enhancement of heat flux limits of standard divertor geometries using impurity levels above typical ITER values is also considered. The power handling capability is found to saturate at impurity levels above ITER so that the power handling capacity of partially detached cases is not substantially improved. One dimensional models to capture the basic physics of this saturation are also presented.

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Date submitted: 23 Jul 2006

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