

Annual Report of the ITPA Pedestal and Edge Physics Topical Group, 2012

Guido Huijsmans, Alberto Loarte, Rajesh Maingi and Naoyuki Oyama

The ITPA Pedestal and Edge Physics Topical Group has met ~~twice~~ hosted by General Atomics (USA) during 15-17 October. Each meeting had around 40-50 participants from EU, China, Japan and S Korea. The experiments, modelling and simulation for ELM physics, ELM control methods, PEDA & EAD simulation

the complex growth rate is stationary in radius. If such a point occurs as the pedestal parameters evolve between the ideal MHD limit and the isolated mode

The investigation of L H and H L transitions over a large density range indicated that the density dependence of the threshold power of the L H and H L transitions is very similar.

In JET, a reduction of P_{thr} by ~ 30% with the ILW and the reappearance of the roll over of P_{thr} at low density, which was not found with C wall in the present JET MkII HD divertor geometry, were observed.

The evolution of plasma density after the L H transition with low core fuelling at JET indicated no major

well understood, the W divertor does not seem to represent a risk but rather an advantage regarding H mode access.

The competition of inwards W transport and expulsion by ELMs is a key to determining the level of edge W contamination to be expected in ITER. Two issues remain to be clarified in the short term to make a solid physics based evaluation of the risks that this entails for ITER: one is the determination of the expected transport between ELMs and the other is the required ELM control for the expulsion of the edge accumulated W in ITER.

Present experimental evidence indicates that the presence of W (or Molybdenum in C Mod) can cause a decrease of energy confinement compared to a carbon divertor and thus may be a risk for ITER. In general it is observed that operation with W PFCs leads to lower pedestal pressure and that low Z impurity seeding can lead to a recovery of the energy confinement

The issue is not only ELM to the

- [7] Y. M. Jeon et. al, ELM Control in Application of Non Axisymmetric Magnetic Perturbations in KSTAR AEA Fusion Energy Conference 2012, EX/3-3
- [8] W. Suttrop et. al, Mitigation of Edge Localised Modes with Small Non axisymmetric Magnetic