Contribution ID: **345** Type: **Poster**

Recent Results on High-Triangularity H-mode Studies in JET-ILW

Thursday 20 October 2016 14:00 (4h 45m)

Recent experiments on JET with the ITER-like wall (ILW) show that divertor pumping is a key element to access good confinement at high triangularity in scenarios where high gas injection rates are required to keep W core radiation within acceptable limits (for plasma current above 1.5 MA). Similar to previously reported observations at low-triangularity, the use of a configuration where the divertor pumping is the most efficient (with both strike points in the divertor corners) makes low density operation more accessible, enabling access to higher pedestal temperatures and lower collisionalities. Higher pedestal temperature via profile stiffness lead to an increase of the total plasma pressure and stable discharges with H_98=0.9-1 and global beta of 1.8-2 are now routinely obtained for both plasma shapes (so far up to 2 MA). The density profile remains rather flat in the core with the change in divertor configuration, thus the improved confinement is clearly a pedestal effect. In comparison, discharges with the standard divertor geometry used in previous JET-ILW experiments, with the outer strike point in the horizontal target and the inner strike point on the vertical target, exhibit lower pedestal pressure (lower temperature) and reduced confinement in similar conditions. With the use of optimum pumping, higher pedestal temperatures and pressures (higher pedestal density at a given temperature) are obtained at higher triangularity in agreement with edge stability predictions. This highlights the importance of operating at higher pedestal temperature (high edge current at lower collisionality) to recover the beneficial effects of triangularity on pedestal stability. However, in contrast to results in JET-C, the confinement of high triangularity H-mode plasmas in JET-ILW degrades at higher densities, well before reaching the Greenwald limit, and no signature of the so-called Type I/Type II ELMy regime (characterized by a decrease in ELM frequency with increasing gas injection rate) is found. The role of divertor conditions (recycling and radiation) on the ELMs dynamics, pedestal parameters and plasma confinement at high-triangularity in ILW scenarios will be investigated in order to better understand the different behaviour obtained in JET with the different wall materials.

Paper Number

EX/P6-11

Country or International Organization

Spain

Author: Dr DE LA LUNA, Elena (CIEMAT)

Co-authors: Dr SIPS, Adrianus (JET Exploitation Unit); Dr FERREIRA NUNES, Isabel Maria (IPFN/IST); Dr FLANAGAN, Joanne (CCFE, UK); Dr FRASSINETTI, Lorenzo (KTH, Finland); Dr AMICUCCI, Luca (ENEA, Italy); Dr DREWELOW, Peter (IPP, Germany); Dr LOMAS, Peter (CCFE, UK); Dr FERNANDA, Rimini (CCFE, UK); Dr SAARELMA, Samuli (CCFE)

Presenter: Dr DE LA LUNA, Elena (CIEMAT)

Session Classification: Poster 6

Track Classification: EXS - Magnetic Confinement Experiments: Stability