**Impact of the static DED on edge turbulence and turbulent transport on TEXTOR**

Y. Xu[1], R. R.Weynants[1], S. Jachmich[1], M. Van Schoor[1], M. Vergote[1], M. Mitri[2], M. W. Jakubowski[2], B. Unterberg[2], K. H. Finken[2], M. Lehnen[2] and the TEXTOR team

[1] *Laboratoire de Physique des Plasmas – Laboratorium voor Plasmafysica, Association 'Euratom-Belgian state', Ecole Royale Militaire – Koninklijke Militaire School, B-1000 Brussels, Belgium*[*]

[2] *Institute für Plasmaphysik, Forschungszentrum Jülich, D-52425 Jülich, Germany*[*]

[*] *Partner in the Trilateral Euregio Cluster (TEC)*

The impact of the static DED (DC current) on edge turbulence and turbulence-driven particle transport has been investigated by Langmuir probe arrays on TEXTOR under various DED configurations (base mode $m/n$=12/4, 6/2 and 3/1, respectively). With DED, the magnetic perturbation creates a chaotic behavior of the field lines, including an ergodic zone (EZ) with long and laminar zone (LZ) with short connection length to the wall, respectively. It has been generally observed that in the EZ area the local turbulent flux reverses sign from radially outwards to inwards and meanwhile the turbulence itself is profoundly modified by energy redistribution in frequency spectra, suppression of large-scale eddies and the change of the fluctuation propagating direction. In the laminar region where the magnetic ergodization is no longer efficient, the turbulence is found to react to an observed reduced flow shear during the DED phase. In the scrape-off layer (SOL) defined by the limiter, the turbulence intermittency is also significantly affected by the DED. During the operation of the static 6/2 DED, it is found that in high density plasma discharges ($\bar{n}_e \geq 2.5\times10^{19}$ m$^{-3}$) the bursty blobs in the far SOL are strongly suppressed with reduction of both skewness and kurtosis in the density fluctuation signals, whereas for low density plasmas the change is much less pronounced. All of these results suggest a controlling role by an ergodized magnetic boundary on edge turbulence and turbulent transport and thus the effectiveness of DED in optimizing the plasma-wall interaction.