Contribution ID: **3426** Type: **not specified**

P4.1050 Comparison of tokamak plasma midplane with divertor conditions

Thursday, 11 July 2019 14:00 (2 hours)

See full abstract here
http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1050.pdf

In tokamaks, the scrape-off layer between the midplane and the divertor is experimentally not well diagnosed. Specifically, there is scarce experimental comparison of the ion temperature fluctuation and little information about the parallel velocity of the plasma. To gain a better understanding of the behaviour of the plasma as it streams down from the outboard midplane towards the divertor, a Langmuir-Mach probe is currently mounted on the x-point manipulator at ASDEX Upgrade (AUG) [1]. The probe scans the x-point region from the low field side to the high field side. For standard AUG equilibrium, the probe is operated below the x-point. Thus, making measurements through the private flux region (PFR) possible, allowing the investigation of the filamentary transport towards the divertor and understanding the spreading factor as related to diffusion.
This contribution presents experimental results in the x-point region and their correlation to the midplane will be discussed. During the 2019 campaign of AUG, the New Probe Head (NPH)[2], in which an electron emissive probe, two Langmuir probes, two magnetic pick-up coils and two retarding field analyzers (RFA) are integrated, will be mounted. With the RFA, it might be possible to verify the local evolution of the ion temperature and the correlation of fluctuations at the midplane and the x-point. The experimental results will be compared with the simulation code HESEL (Hot Edge SOL Electrostatic). It is a 2D energy conserving, four field model based on Braginskii equations, which solves for the electron density ne, generalized vorticity , electron and ion pressure pe,i. In HESEL, the parallel dynamics is parametrized, making it possible to map the profiles and the fluctuations at the outboard midplane down to the divertor region. The measurements in the x-point and divertor region may then add to validate the parallel parametrization.
References
[1] H. Meyer et al. Nuclear Fusion 57, 102014, (2017) [2] B.S. Schneider et al. PPCF-102229, in press, (2019)

Presenter: NEM, R.D. (EPS 2019)

Session Classification: Poster P4

Track Classification: MCF