Upgrade of Tore Supra Doppler reflectometer and turbulence measurements during dimensionless parameters scans

L. Vermare[1], P. Hennequin[1], O. Gurcan[1], T. Aniel[2], C. Bourdelle[2], F. Clairet[2], C. Fenzi[2], X. Garbet[2], J.C. Giacalone[2], C. Gil[2], S. Heuraux[3], C. Honore[1], F. Imbeaux[2], R. Sabot[2], J.-L. Segui[2], M. Schubert[2] and the Tore Supra team

[1] *Laboratoire de Physique des Plasmas, CNRS, Ecole Polytechnique, France*
[2] *CEA, IRFM, F-13108 Saint Paul-lez-Durance, France*
[3] *Université Henri Poincare, Institut Jean Lamour, BP 239, 54506 Vandoeuvre Cedex, France*

The Doppler reflectometer system from Tore Supra has been recently upgraded. A new channel, in X-mode polarization in W-band has been added to V-band in O-mode polarization system. The motivation of such upgrade was to access to higher poloidal wavenumbers and to cover a wider radial extension. For typical high magnetic field discharges in Tore supra, the accessibility is now ρ= [0.6-1.1] with k_θ=[4-20]cm^{-1}. Extensive comparisons of turbulence measurements during dimensonless parameter scans are now more easily achievable. Such experiments are performed by varying magnetic field, density profiles and/or temperature profiles from one shot to the other, in order to vary one dimensionless parameter, e.g., ρ^* while the others (ν^* , β, q and the plasma shape) are kept constant. Turbulence measurements using both O-mode and X-mode channels during new ν^* and ρ^* scans performed during the last campaign on Tore Supra will be presented. We will then discuss the impact of changing successively ρ^* and ν^* on the poloidal wavenumber spectra and on the perpendicular velocity profile.

Finally we will present new developments and research potential regarding the installation on Tore Supra of a new Doppler channel in the vertical plan.