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2.43 Systematic study of turbulence properties through reflectometry spectra

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Turbulence is an important issue in fusion plasmas as it was found to have a direct link to the particles and heat transports, and hence the confinement performance. In this paper, we report on a turbulence database that was built from measurements of Tore Supra core reflectometer [1] by parametrization of density fluctuation frequency spectra [2], including 350,000 spectra from 6,000 discharges, covering the global and local parameters. The characteristics of the broad band (BB) component of the spectra will be presented. In Ohmic plasmas, the reduction of the BB component in the central region is linked to the $q=1$ surface. In linear Ohmic confinement (LOC) regime, the BB component amplitude inside this basin is lower than in the saturated Ohmic confinement (SOC) regime. This basin might be explained by a drop of turbulence level inside $q=1$ surface. It disappears with increasing ICRH power. The shape of the BB component which is Gaussian on the outer side becomes triangular or Lorentzian on the inner side. This shape modification might be related to a modification of the turbulence structure. References [1] R. Sabot et al., Nucl. Fusion 46, S685-S692 (2006) [2] Y. Sun et al., the 13th international reflectometry workshop proceedings (2017)

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