# Spatial structure of the turbulence and its scaling with rho* : observations using radial correlation Doppler reflectometry on ASDEX Upgrade

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The spatial structure of turbulence determines the main features of the confinement performance in fusion plasmas; its scaling with plasma dimensionless parameters such as ρ* is thus important and has driven many theoretical, numerical, and (more scarcely) experimental studies [1, 2, 3, 4]. Moreover, the extrapolation to next step machines corresponds to a large step in ρ*. It is expected that the size of turbulent structures scales as the ion Larmor radius which implies a favourable gyro-Bohm scaling of the transport coefficients. However, the formation of large scale structures such as streamers or Zonal Flows can lead to a much more complicated picture [5].

Experiments are conducted on ASDEX Upgrade to precisely study the behaviour of turbulence and transport when the dimensionless parameter ρ* is changed, by changing the mass from D to H, and by scanning the magnetic field, while keeping other parameters such as ν* and β constant. Fluctuations are measured using a complete set of reflectometry techniques. We focus here on observations from radial correlation Doppler reflectometry [6,7], recently installed on ASDEX Upgrade [8,9]. This diagnostic has the ability to measure the fluctuation intensity dependence on the perpendicular wave number (with respect to the direction of both the magnetic field and the radial direction), at distant radial locations simultaneously which gives the radial correlation length. Preliminary results obtained in the context of the ρ* scan experiment, in L mode and H mode, will be presented.

## References

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