

## **Status of the demonstration of Reflectometry based plasma position control on ASDEX Upgrade**

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In ITER, an O-mode FM-CW reflectometer will complement the standard magnetic diagnostic by providing gap measurements, between the separatrix and the vessel wall, for plasma position control. As this is a new application for reflectometry, a full demonstration of its use on a present device is mandatory. ASDEX Upgrade is a well suited experiment where this demonstration can be performed. In this experimental device, ITER relevant plasma regimes and configurations are routinely achieved. Furthermore, its O-mode reflectometer is capable of probing the plasma at lines of sight very similar to two of the four lines of sight of ITER's plasma position reflectometer (PPR). In previous studies[1,2] it was shown that, using a neural network based data processing technique, reflectometry measurements could reliably achieve both the accuracy (1 cm) and time resolutions (10 ms) required for ITER plasma position control. Presently, the actual demonstration of an ITER like PPR is underway in ASDEX Upgrade. Herein we account for the design goals, development status and foreseen milestones of this ITER high priority task. We present the implemented design and how the measurement timing goals are to be attained based on preliminary tests. The phased integration of the diagnostic in the ASDEX Upgrade real-time network is shown and the reach of the achievable demonstration is discussed.

[1] J. Santos *et al.*, Rev. Sci. Instrum. 74 (2003) 1489

[2] J. Santos *et al.*, 8th International Reflectometry Workshop for Fusion Plasma Diagnostics, 2007, Russia.