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## SUCCESSFUL OPERATION OF AN INNOVATIVE PLASMA POSITION CONTROL SYSTEM USING MICROWAVE REFLECTOMETRY

A team of IPFN researchers has demonstrated for the first time that position control of a fusion plasma can be performed using microwave reflectometry signals. The breakthrough experiment was performed at ASDEX Upgrade (AUG) tokamak (Max Planck Institut fuer Plasma Physik-IPP, Germany). The project is lead by Instituto de Plasmas e Fusão Nuclear (IPFN), a research unit of Instituto Superior Técnico (IST), Lisbon.

The development of this technique is essential for ITER long pulse operation. In the experiments performed in ITER relevant regimes (ELMy H modes), the position of the AUG plasma was solely controlled by reflectometry and it was also demonstrated the feasibility of switching from magnetic diagnostics to reflectometry as main sensor for plasma position control.

The reflectometry diagnostic at AUG as well as its dedicated real time data acquisition and data processing (both hardware and software) were developed/operated by IPFN. The AUG control team was responsible for the interface between the real time reflectometry signals and the AUG control actuators.

IPFN has a significant and increasing participation in the various components of the European Fusion Programme (operation, scientific exploitation, hardware development and management of the experimental programme) and ITER. Presently several projects are ongoing for the development of control and data acquisition systems, microwave diagnostics and Remote Handling, areas at which IPFN competencies are largely recognized in Europe.

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