

## **Comparison of different arc detection methods during plasma operations with ICRF heating on ASDEX Upgrade**

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Too high voltages can cause arcs to develop within coaxial transmission lines or ICRF antennas. To avoid damage, arcing must be detected and the RF power switched off. On ASDEX Upgrade different arc detection methods are in use. One of them (SHAD, Sub-Harmonic Arc Detection [1]) has been designed to discriminate ELMs, mismatch reflections and arcs. The power emitted by the plasma is observed through a band-pass filter with a frequency range (4-25 MHz) that eliminates RF generator frequency (30 MHz) and its harmonics. Only the fast transients due to arc generation are supposed to be captured by the detector. During operation, this system triggered whereas other systems did not. It is then crucial to figure out the processes involved in these possibly spurious detections.

Detections from the different methods have been statistically analyzed for ASDEX Upgrade discharges. Different classes of detections have been identified, in which plasma shape, ICRF nonlinear interaction at the edge and detection system conditioning could be involved.

[1] F. Braun et al., Proc. 19<sup>th</sup> Symp. on Fusion Technology, Lisbon (1996).