

## **Tungsten sputtering during ICRF in ASDEX Upgrade**

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Since the experimental campaign in 2006 the poloidal limiters of the ICRF antennas in ASDEX Upgrade (AUG) are W-coated. During ICRF they are a strong source of W, which is attributed to the sputtering by impurities accelerated in rectified sheaths. It is characterized by spectroscopic observations of W- and H-influx and their ratio, the effective W-sputtering yield. Among the main parameters affecting the W source at the antenna limiters during ICRF are plasma shape, antenna-separatrix distance (strongest effect) and gas puffing rate. At a guard limiter ( $\approx 1$  m toroidally away from an antenna limiter and  $\approx 5$  mm further radially away from the plasma) values of W-yields close to those at the antenna limiter are measured at the same poloidal locations for ICRF-only discharges. For combined NBI+ICRF discharges with better fast wave absorption, high W-yields are usually localized at the antenna. Simulations of near-fields at an antenna with full-wave 3D fine-element codes show a non-negligible contribution of the AUG antenna straps to the voltages integrated along magnetic field lines in front of the antenna and a significant influence of the box geometry and box currents on the parallel E-fields, in agreement with [1]. Ways to reduce the parallel voltages are discussed. In the 2007, all plasma facing components in AUG are covered by W and several diagnostics enhancements are implemented. First results on operating ICRF in a full W-machine will be presented.

[1] L. Colas et al., Nucl. Fusion **45** 767–782 (2005).