

# Extreme UV spectroscopy measurements and analysis for Tungsten density studies in the WEST tokamak

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The VUV emission of tungsten in WEST is measured by an absolutely calibrated grazing incidence spectrometer of the Schwob-Fraenkel type which can scan the lower half of the plasma. We have analysed the detected spectral lines in the range 120-140 Å and compared their behaviour with calculations and published information. We obtained an unambiguous identification of four intense and well resolved spectral lines emitted by W<sup>42+</sup>-W<sup>45+</sup> close to the magnetic axis in the analysed experiments. The W<sup>44+</sup> 132.88 Å line is very intense and thus probably particularly useful for core W monitoring in plasmas with temperatures above 3 keV. The measured spectral line brightnesses are used to assess the Tungsten density in the emission region. For the ions of interest, the emission location can be very sensitive to the ionisation equilibrium while the W density is very sensitive to the photon emission coefficients, hence the importance of using high quality calculations for the latter.