

Collisional-Radiative calculations and EUV emission of low-density tungsten plasmas in the temperature range [800-5000] eV

We present specific configuration-average (CA) collisional-modeling calculations of tungsten plasmas at low electron density $n_e = 5 \cdot 10^{13} \text{ cm}^{-3}$ for electron temperatures in the range 0.8 to 5 keV. These conditions are relevant to current tokamaks. In this temperature range, the modeling of the ionization balance and of the spectra is a long-standing problem.

We discuss here the problem of ensuring completeness of the list of configurations included in the calculations. We also present comparisons of experimental measurements in the EUV range performed at tokamak WEST, with calculated spectra based on the use of the unresolved transition array (UTA) and of the spin-orbit split array (SOSA) formalisms.

A conclusion is that standard calculation methods used for the evaluation of the configuration-average collisional and radiative rates, are fine provided that a correct list of configurations is used in the calculations.

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