

Joint IAEA-FZJ Technical Meeting on the Collisional-Radiative Properties of Tungsten and Hydrogen in Edge Plasma of Fusion Devices

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Fundamental atomic data for tungsten and hydrogen and the effect of the finite density edge plasma

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Both tungsten and hydrogen pose a set of challenges in assembling a set of data suitable for modelling emission from tokamak edge plasmas. Understanding the edge plasma of tokamaks is essential to controlling the fusion plasma and the environment demands that collisional-radiative models are required to make effective use of the fundamental atomic data. As a high Z element, a large volume of data is needed for tungsten little of which was available just 10 years ago. A multi-year, multi-team effort was needed to produce high quality data for the atomic structure and all processes (excitation, ionization, recombination and charge exchange). Although more work is still needed the situation is much improved. Hydrogen has the problem of familiarity but the precision needed to properly account for high-n influences, opacity and non-Maxwellian electrons also requires new approaches. This talk will outline the collection and processing of tungsten and hydrogen data from an ADAS perspective and indicate where there are still gaps to be filled.

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