

COMPREHENSIVE Z-DEPENDENCE ANALYSIS OF SOFT X-RAY SPECTRA FROM HIGHLY CHARGED HEAVY IONS USING MAGNETICALLY CONFINED HIGH-TEMPERATURE PLASMAS

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Abstract. Soft X-ray spectra from highly charged heavy ions are of great interest in terms of atomic physics as well as plasma applications, e.g., nuclear fusion and industrial light sources. In the last decades, soft X-ray spectra from various heavy ions have been systematically recorded in the Large Helical Device (LHD), a magnetically confined fusion device at the National Institute for Fusion Science (see Suzuki et al. 2017, Suzuki et al. 2018). The spectral shape drastically changes between discrete and quasi-continuum features depending on the electron temperature. The LHD spectra have been compared with theoretical calculations and the other experimental data. Consequently, atomic number (Z) dependence of the discrete and/or quasi-continuum spectra for $Z=50-83$ have been investigated in more detail than ever before. In addition, we could clearly explain a peculiar Z -dependence arising from strong spin-orbit interactions specific to highly charged heavy ions (see Koike et al. 2022).

References

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