

Large Scale Atomic Calculations for Fluorescence Yield Determination

When analysing and modeling the emissions of astrophysical events or plasmas an important quantity and benchmark is the fluorescence yield (FY). This will change according to the element, as well as the charge state we are modeling. These FYs can be calculated from first parameters, according to the atomic system, and can later be used in modeling codes to provide more accurate emitting models.

In this work, we discuss the computation requirements for the large scale calculation of FYs from first parameters. We will also explore how we presently calculate FYs using a state-of-the-art multiconfiguration Dirac-Fock approach. Additionally, we will give an example of recent K- and L- shell FY values for the full isonuclear sequence of Fe ions, which were found to be very similar up to the removal of 14 electrons.

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Session Classification: Poster Session