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Atomic Data Quality and Needs for Collisional-Radiative Modeling[1]

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Reliable calculation of plasma kinetic characteristics and emission and/or absorption spectra necessarily involves large sets of atomic data such as state energies, radiative and autoionization transition probabilities and collisional cross sections or rate coefficients. The quality and extension requirements for such data often depend on a particular problem as various plasmas may exhibit non-Maxwellian distributions, anisotropy effects, or be under strong fields that may modify atomic structure. We will present an overview of the recent efforts on analysis of data quality requirements and data needs for collisional-radiative modeling of diverse plasmas, from magnetic fusion to astrophysics to dense laser-produced plasmas.

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