

Abstract Submitted
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Electron-impact excitation of Fe II¹ SWARAJ TAYAL, Clark Atlanta University, OLEG ZATSARINNY, Drake University — New extensive calculations are reported for electron collision strengths, rate coefficients and transitions probabilities for the wide range of transitions in Fe II. The collision strengths were calculated using the B-spline Breit-Pauli R-matrix method. The MCHF method in connection with adjustable configuration expansions and semi-empirical fine-tuning procedure is employed for an accurate representation of the target wave functions. The close-coupling expansion contains 340 fine-structure levels of Fe II and includes all levels of the $3d^64s$, $3d^54s^2$, $3d^7$, $3d^64p$ configurations, plus a few lowest levels of the $3d^54s4p$ configuration. The effective collision strengths are obtained by averaging the electron collision strengths over a Maxwellian distribution of velocities at electron temperatures in the range from 10^2 to 10^5 K, and were tabulated for the 57630 transitions between all included fine-structure levels. The present results considerably extend the existing data sets for Fe II, allowing more detailed treatment of the available measured spectra from different space observatories. Comparison with other calculations for collision rates and available experimental radiative rates is used to assess the likely uncertainties in the existing data sets.

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