

Abstract Submitted
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THE IRON PROJECT AND THE RMAX PROJECT: Radiative and Collisional Processes of Iron Ions - Fe I, Fe II, Fe XVI, Fe XVII¹
MAXIMILIANO MONTENEGRO, SULTANA NAHAR, ANIL PRADHAN, CHIRANJIB SUR, The Ohio State U — Results from work in progress under the Iron Project and Rmax Project on electron impact excitation and radiative processes of photo-excitations, photoionization and electron-ion recombination will be reported. Whereas the Iron Project is involved in scattering and radiative atomic processes of iron and iron-peak elements, and the Rmax Project aims particularly at the X-ray spectroscopy of astrophysical objects. We will present (i) collision strengths of Fe II at low energies using an accurate wavefunction needed for spectral analysis of infrared region, (ii) oscillator strengths and radiative decay rates for allowed and forbidden transitions in Fe I and Fe II, (iii) photoionization and electron-ion recombination of ground state of Fe XVI for over a large energy/temperature range up to and including K-shell ionization and core excitations as observed in X-ray spectra, and (iv) photoionization cross sections of large number fine structure levels ($n \leq 10$ and $0 \leq l \leq 10$) needed for astrophysical and modeling work. Relativistic approach in the Breit-Pauli approximation is being employed to study these atomic processes.

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