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THE IRON PROJECT AND THE RMAX PROJECT: Photoionization, Electron-IonRecombination and Oscillator Strengths of Fe Ions, Fe XVII and Fe XIX<sup>1</sup> WERNER EISSNER, Stuttgart University, SULTANA NAHAR, ANIL PRADHAN, The Ohio State U — The aims of the Iron Project and the Rmax Project are detailed study of radiative and collisional processes of astrophysically abundant atoms and ions, mainly iron and iron-peak elements, over a wide energy range, from infra-red to X-rays. We will present the complete results on photoionization, partial and total, of fine structure levels with n < 10 of Fe XVII. They correspond to a large-scale computation using a wave function expansion containing 60 levels of the core. Preliminary results on total recombination rate coefficients ranging over low to very high temperatures, especially where the ion is abundant in astrophysical plasmas, will be presented. We will also report the latest results on oscillator strengths for photo-excitations in Fe XIX. This highly charged nitrogen-like iron ion has over thousands of bound fine structure levels. The calculations have been carried out in relativistic Breit-Pauli R-matrix (BPRM) method. The forbidden electric quadrupole, electric octupole, magnetic dipole and magnetic quadrupole transitions for Fe XIX correspond to fine structure levels upto 4p obtained from atomic structure calculations in Breit-Pauli approximation.

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