

Abstract Submitted
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THE IRON PROJECT & Opacity Project: Photoionization of iron ions for Opacities and collisional excitations of P III¹ W. EISSNER², Stuttgart University, L. ZHAO, R. NAGHMA, S. NAHAR, A. PRADHAN, Ohio State Univ - Columbus — Fe XVIII is the 2nd most abundant iron ion and probably the most contributing ion to opacity near the boundary between radiative and convection zones in the sun. The current poor agreement of the higher opacity from the 3D astrophysical model as well as and measurement at Z-pinch with the predicted opacity is considered to be due to lower estimation in photoionization cross sections (σ_{PI}) of Fe XVII - XIX in the existing data. In order to obtain high accuracy σ_{PI} with high energy resonant features, a large-scale computation has been started for σ_{PI} of Fe!XVIII in the relativistic Breit-Pauli R-matrix (BPRM) method and using a large wavefunction expansion. Work is in progress to resolve all the computational challenges and preliminary results will be presented. Collision strengths for P III is also under investigation using BPRM method and a wavefunction expansion of 18 levels as the lines of this basic element of life have been detected recently. Features in collision strengths and selected line ratios for low lying levels for diagnostics of plasmas obtained from preliminary results will be presented.

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