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THE IRON PROJECT & Iron Opacity Project: Evidence of increased opacity for solar plasmas W. EISSNER, Stuttgart U, - HALA, S. NAHAR, A. PRADHAN, Ohio State U, J. BAILEY, Sandia Natl Lab — The recently reported measurement[1] of opacity of iron plasma at high energy density similar to that in the solar convection zone near the boundary of radiative zone shows enhanced continuum, and the integrated opacity is about 7% higher than that from prediction using the existing Opacity Project (OP) data for photoionization and oscillator strengths. This agrees toward 15% increment of opacity needed to explain the lower abundance of elements determined by 3D spectral analysis of solar observation. However, our later large-scale calculations that included strong resonances due to excitations to highly excited cores states for Fe XVII indicated significant amount of opacity missing in the OP data. We will present our latest findings on the importance of highly excited states on the opacity and how proper inclusion of resonances could enhance the continuum. These will have important impact on the composition of the Sun, the benchmark for astronomical objects. We will also present in progress work under the Iron Project on the collision strengths of Si IX obtained using relativistic effects in the Breit-Pauli R-matrix method and transition probabilities of fine structure transitions in Ti I. * Partial support: NSF, DO

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