Abstract Submitted
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The Iron Project and the Rmax Project: X-ray Spectroscopy of Highly Charged Ions JUSTIN OELGOETZ, ANIL PRADHAN, SULTANA NAHAR, MAXIMILIANO MONTENEGRO, Ohio State University, WERNER EISSNER, University of Stuttgart — We will describe recent work on (1) the modeling of spectra arising from highly charged ions, and (2) the data that goes into such models. Emission from the Kα, and in some cases, Kβ lines of the Li, He, and H-like states of ions is of great interest in X-ray astronomy and high-temperature laboratory sources such as fusion devices. Current results at modeling these lines including all relevant atomic processes for the elements Fe, Ni and Ca will be presented, along with a discussion of the computational methods employed and the possible implications of the work. An extensive set of oscillator strengths, line strengths and radiative decay rates for the allowed and forbidden transitions in Fe XVIII have been obtained in the relativistic Briet-Pauli R-Matrix approximation. The results include 1174 fine structure levels of total angular momenta J= $\frac{1}{2}$ - $\frac{17}{2}$ and n le 10 and about 171,500 transitions among them. Sample results will be presented. Parts of this work were supported under grants from the NSF and the NASA Astrophysical Theory Program as well as by Los Alamos National Laboratory which is operated under Department of Energy contract W-7405-ENG-36 by the University of California. Many of the calculations were carried out at the Ohio Supercomputer Center.

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