

Abstract Submitted
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Characteristic Features of Photoionization of Fe XIX¹ SULTANA NAHAR, Ohio State University — Characteristic features of the resonances and background cross sections for photoionization (σ_{PI}) of oxygen-like iron ion, Fe XIX + $h\nu \rightarrow$ Fe XX + e, are studied. These features are introduced by excitations of the core ion to states of n=2,3,4 complexes in σ_{PI} of the ground, equivalent electron, and single valence electron excited states. Study from a large number of states is important to establish the general properties of photoionization for complex ions. The results correspond to the first detailed study of the ion with a complete set of σ_{PI} for 900 bound states with $n \leq 10$ and $l \leq 9$ using R-matrix method and close coupling approximation. The ion is of great interest for its lines in the x-ray to UV spectra of astronomical objects and for the solar opacity. It is found that i) the ground and equivalent electron states have high peak narrow Rydberg resonances in the low energy region corresponding to n=2 excitations only, ii) the resonances are stronger for core ion excitations to n=3 complex compared to those for n=2,4, iii) Seaton resonances are also most distinct in the energy region between n=2 to n=3 complexes, and iv) resonances with lower peaks in the energy region between n=3 and n=4 excitation indicate convergence.

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