

Abstract Submitted  
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**Calculation of Radiative and Collisional Atomic Processes** G.X. CHEN, K. KIRBY, ITAMP, Harvard-Smithsonian Center for Astrophysics, N.S. BRICKHOUSE, Harvard-Smithsonian Center for Astrophysics — Relativistic calculations of the atomic structure of Ne IX have been carried out using the multi-configuration Dirac-Fock (MCDF) method. Accurate X-ray wavelengths and transition probabilities are obtained for transitions involving levels with  $n \leq 10$ . We use several techniques to calculate accurate and consistent multipole  $A$ -coefficients. For example we report a transition rate of  $(1.07 \pm 0.02) \times 10^4 \text{ sec}^{-1}$  for the  $z$  line in good agreement with the recent EBIT measurement and with previous calculations using different methods. A subset of the MCDF orbitals for  $n \leq 5$  is used for relativistic  $R$ -matrix calculations of electron impact excitation and recombination using the Breit-Pauli  $R$ -matrix and the Dirac  $R$ -matrix methods. These atomic data, together with other related data from the APED atomic database for Ne IX, are used to build an extended plasma model for X-ray spectra of the Capella corona observed by the *Chandra* X-ray Observatory. We offer some possible explanations for the problems in the line intensity ratios  $K\beta_2/K\beta_1$  and in the inconsistency in the temperature determined by differential emission measurements.

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