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Inner shell photoionization of Mg and Ca isonuclear sequence using RMCTD AARTHI GANESAN, Jain U., Bangalore, P. C. DESHMUKH, IIT-Tirupati, S. T. MANSON, Georgia State U. — The influence of removing outer electrons on the inner 2s subshell photoionization cross section and photoelectron angular distribution is studied along the isonuclear sequences of Mg and Ca using the relativistic random phase approximation *with* relaxation (RRPA-R) [1] and the relativistic multiconfiguration Tamm-Dancoff (RMCTD) approximation [2]. Earlier calculations of isonuclear sequences concluded that the photoionization cross sections of inner shells remain unaffected by the removal of outer-shell electrons, except for a shift in the threshold [3]. Studies were carried out using the RRPA [4, 5] and the RRPA-R formalism to include relaxation effects for 2s subshell of Ar and Mg [6] which showed that the inner-shell cross-sections are affected somewhat by core-relaxation, while the angular distribution from the inner-shells is affected by the removal of outer electrons *even* in the absence of core-relaxation. The present work shows the variation of the 2s cross section and photoelectron angular distribution from the isonuclear ions of Mg and Ca using RMCTD. Also, the effect of core relaxation of the 2s subshell of the isonuclear sequence of Ca is reported using RRPA-R, in addition to RMCTD. [1] V. Radojevic *et al* Phys. Rev. A **40**, 727 (1989); [2] V. Radojevic and, W. R. Johnson, Phys. Rev. A **31**, 2991 (1985); [3] S. T. Manson and J. W. Cooper, Phys. Rev. **165**, 126 (1968); [4] W. R. Johnson and, C. D. Lin, Phys. Rev. A **20**, 964 (1979); [5] G. Nasreen *et al* Phys. Rev. A **40**, 6091 (1989); [6] G. B. Pradhan *et al* Phys. Rev. A **80**, 053416 (2010).

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