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Resonant Auger Destruction in X-ray Photoionized Plasmas

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Resonant Auger Destruction (RAD) is a hypothesized line-destruction mechanism, involving the interplay of atomic kinetics and radiation transport in X-ray photoionized plasmas, and has been invoked to explain the apparent absence of $K\alpha$ satellite emission from L-shell ions in X-ray spectra of accretion-powered black holes. However, detections of this type of line emission in the X-ray spectra of neutron star accretors in our own Galaxy casts doubt on the efficacy of the RAD mechanism. Resolution of this problem, through atomic kinetics calculations, as well as direct laboratory measurements at the Sandia Z Facility, bears directly on interpretations of astrophysical X-ray spectra and accretion disk structure theory in the general relativistic domain.