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Theoretical predictions of the shapes and parameters of γ_1' satellites L-X-Ray lines of 4d transition elements SURENDRA POONIA, Research Scientist (Atomic and X-Ray Spectroscopy) — The X-ray satellite spectra arising due to $2p_{1/2}^{-1}3x^{-1}$-$3x^{-1}4d_{3/2,5/2}^{-1}$ (x ≡ s, p, d), i.e. L_2M_x-$M_xN_{4,5}$ transition array, in elements with Z = 41 to 51, have been calculated, using available Hartree-Fock-Slater data on K-L_2M_x and L-$M_xN_{4,5}$ Auger transition energies. The relative intensities of all the possible transitions have been estimated by considering cross - sections for the Auger transitions simultaneous to a hole creation and then distributing statistically the total cross sections for initial two hole states L_2M_x amongst various allowed transitions from these initial states to $M_xN_{4,5}$ final states by Coster-Kronig (CK) and shake off processes. In both these processes initial single hole creation is the prime phenomenon and electron bombardment has been the primary source of energy. On the basis of agreement between computed spectra and measured satellites, It is observed that the satellite $L\gamma_1'$in $_{41}$Nb to $_{51}$Sb is emitted by the superposition of the most intense transitions namely L_2M_1 $^1P_1$-M_1N_4 $^1D_2$, L_2M_1 $^3P_0$-M_1N_4 $^3D_1$,L_2M_3 $^3D_1$-M_3N_5 $^3D_1$ and L_2M_3 $^3D_1$-M_3N_4 $^3P_0$ contributing in order of decreasing intensity.

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