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Gaussian curves of X-Ray satellites spectra in the Lα $_x$, Lα $_2$, Lβ $_1$, Lβ_2 and Lγ region of 3d, 4d and 5d transition elements SURENDRA POONIA, Research Scientist (Atomic and X-Ray Spectroscopy) — The X-ray satellites Lα', Lα'', Lα''', Lα'''',Lα_3, Lα_4, Lα_5, Lα^{ix}, Lα^{x}, Lα_s, Lβ_1^I, Lβ_1^{II}, Lβ_1^{III}, Lβ_1^{IV}, Lβ_2^I, L$\beta_2^{(b)}$, Lβ_2^{II} L$\beta_2^{(c)}$, Lγ_1', Lγ_2', Lγ_2'' and L$\gamma'_{2,3}$ observed in the L-emission spectra in elements with Z = 26 to 92, have been calculated. The energies of various transitions have been calculated by available Hartree-Fock-Slater using the semi-empirical Auger transition energies in the doubly ionized atoms and their relative intensities have been estimated by considering cross - sections of singly ionized 2x^{-1} (x $\equiv$ s, p) states and then of subsequent Coster-Kronig (CK) and shake off processes. In both these processes initial single hole creation is the prime phenomenon. Each transition has been assumed to give rise to a Gaussian line and the overall spectrum has been computed as the sum of these Gaussian curves. The calculated spectra have been compared with the measured satellite energies in L emission spectra. Their intense peaks have been identified as the observed satellite lines. The one to one correspondence between the peaks in calculated spectra and the satellites in measured spectra has been established on the basis of the agreement between the separations in the peak energies and those in the measured satellite energies. Group of transitions under the transition schemes L_3M_x-$M_xM_{4,5}$, L_2M_x-$M_xM_{4,5}$, L_3M_x-$M_xN_{4,5}$ and L_2M_x-$M_xN_{4,5}$ (x $\equiv$ 1-5), which give rise to these satellites have been identified.

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