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Double-electron photoionization of outer electrons in complex atoms. M. YA. AMUSIA, Racah Institute of Physics, Hebrew University, Jerusalem, Israel and Ioffe Physical-Technical Institute, St. Petersburg, Russia — The aim of this talk is to demonstrate thatdouble-electron photoionization of outer electrons in complex atoms proceeds via virtual creation of the nearest in energy s-vacancy instead of direct elimination of two outer electrons. As a result, the elimination of outer electrons by a single photon takes place not because solely of the interaction between ionized electrons, but due to a more complex mechanism, namely that with active participation of the closest $s-$electron. The suggested mechanism becomes particularly important at high photon energiesω. It is known that there the one-electron photoionization cross-section $\sigma_s^+(\omega)$ for an $s-$electron decreases as $\sigma_s^+(\omega) \sim 1/\omega^{7/2}$with ω growth. In the most studied case of helium double-electron ionization its cross-section $\sigma_s^{++}(\omega)$ decreases also as $\sigma_s^{++}(\omega) \sim 1/\omega^{7/2}$ thus leading to a known fact that the ratio $R_{ss/s} = \sigma_s^{++}(\omega)/\sigma_s^+(\omega)$ is ω independent at$\omega \to \infty$. The suggested mechanism changes the situation dramatically leading for two outer p-electrons photoionization to the ratio $R_{pp/p} \sim \omega \to \infty$ at$\omega \to \infty$, because $\sigma_{pp}^{++}(\omega) \sim 1/\omega^{7/2}$while $\sigma_p^+(\omega) \sim 1/\omega^{9/2}$. This feature could be observed experimentally if to study two outgoing electrons in coincidence.

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