

Abstract Submitted
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Intra-doublet correlations in 4d subshell of Xe MIRON YA AMUSIA, Racah Institute of Physics, the Hebrew University, Israel and Ioffe Physico-Technical Institute, St. Petersburg, Russia, LARISSA V. CHERNYSHEVA, Ioffe Physico-Technical Institute, St. Petersburg, Russia — We demonstrate here that an additional near threshold structure appear due to influence of four $4d_{3/2}$ electrons upon the six $4d_{5/2}$. This effect is a manifestation of interaction between levels that are initially degenerate after this degeneration is eliminated. Being a relativistic effect, this phenomenon can be treated non-relativistic as well. The energy splitting between spin-orbit components of the 4d level can be taken from experiment and the nature of the $4d_{5/2}$ and $4d_{3/2}$ splitting is inessential. The approach used is similar to that developed for consideration of intra-doublet correlations between $3d_{3/2}$ and $3d_{5/2}$ Xe levels. We treated Xe in the non-relativistic RPAE frame, considering the $3d_{10}$ as consisting of two groups of spin-up and spin-down electrons. The case of 4d is different from 3d since the spin-orbit splitting in 4d is much smaller -2 eV. We demonstrate that the account of intra-doublet correlations leads to a small maximum close to threshold in $4d_{5/2}$ and a prominent variation of the cross-section at 75-81 eV. The variation for $4d_{3/2}$ is smaller, but substantial.

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