

Abstract Submitted
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Spin-Orbit Activated Intra-Doublet Coupling in Generalized Oscillator Strengths of Cs and Ba¹ M. YA. AMUSIA, The Hebrew University, Israel, L.V. CHERNYSHEVA, A. F. Ioffe Physical-Technical Institute, Russia, Z. FELFLI, A. Z. MSEZANE, Clark Atlanta University, MSEZANE/FELFLI TEAM, AMUSIA COLLABORATION, CHERNYSHEVA COLLABORATION — This paper investigates how the generalized oscillator strengths (GOS's) of the Cs and Ba $3d_{5/2}$ and $3d_{3/2}$ levels are affected by the intra-doublet correlations. The calculations are carried out using the Hartree-Fock approximation and a modified version of the Spin-Polarized Random Phase Approximation with Exchange which takes into account multi-electron correlations and relaxation effects of the excited electrons due to the creation of the $3d$ -vacancy. Our GOS's for Cs and Ba, obtained for momentum transfer $q = 0$ to 4 a.u. and energy transfer $\omega = 0.01$ to 8 Ry , demonstrate the strong interaction between components of the spin-orbit doublet of the $3d$ electrons in Cs and Ba. This leads to the appearance of an additional maximum in the GOS for the $3d_{5/2}$, due to the action of the $3d_{3/2}$ electrons. The intra-doublet correlations are very important in the dipole, monopole and quadrupole transitions and have dramatic effects upon the GOS's for the $3d_{5/2}$ of Cs and Ba.

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