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QED phenomena in highly ionised atoms

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Abstract

In the case of multiply-charged ions when energy levels with the same values of the total angular momentum J , its projection J_z and parity P may overlap, the SD difficulties are shown to manifest themselves in QED calculations of the respective spectral line profiles (SLPs). In this case we have used the regularisation method of cut momentum L . A logarithmic L -dependence seems to be contained in the obtained formulas of NB and SLP. On the example of hydrogen-like uranium $U+91$ the SLPs have been calculated which spectra are deformed. It has been studied a dependence of SLPs from cut off momentum L , state $|i\rangle$ and mutual distance ΔE_{ji} .

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Keywords

Atomic spectroscopy, Quantum electrodynamics, Quantum field theory