

Abstract

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The investigation of heavy elements structure is one of the main interests of nuclear physics. In recent decades, with the progress of acceleration techniques and detection methods, a large amount of data was obtained regarding the structure of isotopes in the fermium region. However, even with the enormous increase in the amount and quality of these data, some important information about their nuclear structure remains unknown. One of these scarcely studied - but dominant for some nuclei in this region - types of decay is electron capture. Only four studies of electron capture decay were performed using conversion-electron calorimetry method (e.g., ^{258}Db or ^{253}Md). It was proven as a strong tool for the study of nuclear structure, enabling complex analysis of excited states populated via this type of decay. This Thesis aims to obtain one of the first electron capture decay data in the region of transfermium isotopes using the conversion-electron calorimetry method. Besides the β decay studies, this method will also be applied to study nuclear isomers in the same region.

Key words: nuclear structure, nuclear reactions, heavy nuclei, radioactive decay