

Fine structure of the alpha-decay of actinides

Tuesday 29 October 2024 15:35 (15 minutes)

A model for the alpha-decay of actinide nuclei has been presented. Within the framework of this model, the fine structure of alpha-decay and its dependence on the spectroscopic factor are studied.

The calculation of the potential energy of the alpha-cluster system and the wave function of the metastable state is performed taking into account the quadrupole and octupole deformation of the daughter nucleus. To calculate the dependence of the spectroscopic factor on angular momentum, the relative motion of the alpha-particle and the daughter nucleus was taken into account. The calculations were performed in the two-potential approach.

The developed model was used to analyze the fine structure of different isotopes of Ra, Th, U and Pu. By comparing the results obtained with experimental data, the parameters of the octupole deformation were estimated.

Primary authors: BAYRAMOV, Daniel (Moscow State University); SHNEIDMAN, Timur (Joint Institute for Nuclear Research)

Presenter: BAYRAMOV, Daniel (Moscow State University)

Session Classification: Theoretical Physics

Track Classification: Theoretical Physics