

NEW POTENTIAL OF THE ONE-PARTICLE MODEL OF ALPHA-DECAY

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Phenomenological one-particle model of alpha-decay, which is based on a mechanism of alpha-particle tunneling through Coulomb barrier, is proposed. In contrast to classical models of Gamow and Landau, calculations of the barrier penetrability are carried out with no use of quasiclassical approximation as well as the processes of formation and disappearance of alpha-particles in the surface layer of parent nucleus are taken into account. In the framework of this model, explicit relations for the Coulomb barrier penetrability, the phase tunneling and reflection time of alpha-particles as well as for the alpha-particle formation time are obtained. In addition, the program for development of time microscopic theory of alpha-decay of non-spherical nuclei, which is aimed not only to describe existing experimental data on alpha-decay of deformed nuclei, but also to plan new experiments, is given.