

A SPACE-TIME METHOD OF DESCRIPTION
OF BREMSSTRAHLUNG EMISSION
IN α -DECAY OF HEAVY NUCLEI

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A space-time method of description of the emission of photons in the α -decay of heavy nuclei is submitted. The method is based on the quantum mechanical one-particle model of the α -decay of a nucleus with use of a decay barrier, it uses the multipolar expansion of the vector potential of an electromagnetic field. A description of the emission of photons is fulfilled on the basis of quantum electrodynamics. A calculation of the bremsstrahlung spectrum for nucleus ^{214}Po with the account of E1 and M1 transitions in the approximation of monochromatic waves is carried out. Times of tunneling of an α -particle through the decay barrier are found with the account of the photon emission and without it. A difference of these two times represents a braking of the α -particle on its tunneling, which is related to the sub-barrier bremsstrahlung emission.