

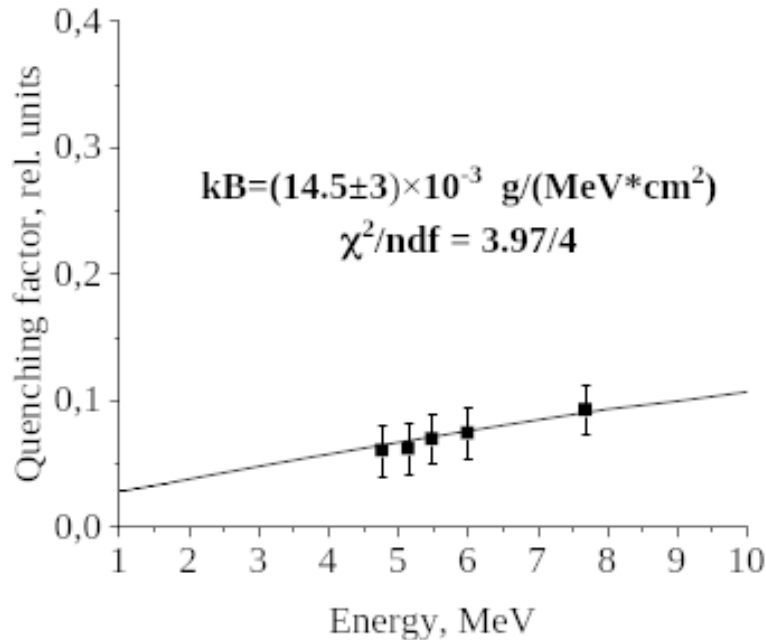
MEASUREMENT α -PARTICLE QUENCHING IN TELLURIUM-LOADED LIQUID SCINTILLATORS

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Amplitude spectra of α -particle with different energies ^{239}Pu (5.15 MeV) and ^{226}Ra (4.77, 5.49, 6.00, 7.69 MeV) were measured for samples of liquid scintillators (LS) based on linear alkybenzene and containing various tellurium-containing additives (diphenyltellurium di-2-ethylhexanoate, complex compound of diphenyltellurium oxide and di-(2-ethylhexyl)phosphoric acid and tellurium dibutanediol-1,2-ate). The data obtained are presented in comparison with unloaded LS. Based on the semi-empirical method proposed in [1], which built on the classical Birks formula with total stopping power for electrons and ions (calculated using ESTAR and SRIM), estimates of the Birks constants for LS were obtained.



Quenching factor as a function of α -particle energy for unloaded liquid scintillator based on linear alkylbenzene

The results obtained make it possible to predict the behavior of alpha particles with energies from 1 to 10 MeV when they are detected by liquid scintillators.

1. Tretyak V.I. // Astroparticle Physics. Vol. 33, № 1, 2010. P. 40–53.
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