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Numerical modeling of characteristics of plastic scintillators.

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The possibility of using the plastic scintillators for detection nuclei with high ionizing density was studied in this report. The scintillators could have different characteristics such as attenuation length, light yield efficiency. It is also important to take into account the influence of the quenching effect on the detection of heavy nuclei. It was analyzed the method of calibration plastic scintillators by means the radioactive isotopes. For that it was carried out numerically modeling the registration α-particles with energies of several MeV to determine characteristics of the scintillator that allowed interrelating amplitude of detector output and energy deposition of a nucleus. The proposed method gives the opportunity to calibrate the plastic scintillators for particles and nuclei with energy losses from 2 MeV/g/cm^2 (a minimum ionizing particle) up to 10^3 MeV/g/cm^2, which corresponds to the registration of nuclei from helium to iron.

Presentation type

Poster

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