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The possibilities of using of monoenergetic electron production in a pyroelectric accelerator for calibration of different detectors

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The change in temperature of single crystals in vacuum conditions, such as lithium tantalate (LiTaO3), gives an attractive possibility to generate and accelerate electron and positive ions fluxes up to 100 keV and more. This phenomenon is a base of the conception of a pyroelectric accelerator. This type of the accelerator is a compact device, which does not require an external high-voltage circuit and the use of hazardous materials and can be used for electron, positive ion, neutron and X-ray generation.

One of the interesting features of the pyroelectric accelerator is the generation of monoenergetic electron flux with a stable value of peak energy for a long time. The reason for such long-term stabilization of flux energy is not clear yet. Here we present studies of features of electron flux in pyroelectric accelerator depending on the pressure of residual gas, the distance between the crystal and the target-collimator. The possibilities and perspectives of a use of the pyroelectric accelerator for calibration are discussed.

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