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# Conception of Piezoelectric Accelerator

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Conception of piezoelectric accelerator

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Here we propose the conception of small-size piezoelectric accelerator of charged particles that operates due to piezoelectric effect at varying mechanical force applied to piezoelectrics in vacuum. The accelerating voltage and the energy accelerated particles are estimated. In the proof-of-principle experiment we demonstrate the effect of the emission of X-ray radiation at the mechanical compression of piezoelectric ceramics in vacuum. The compression leads to the appearance of charges and potentials on the surfaces of the piezoelectrics and also to the arising of the electric field in vacuum. Electrons are accelerated in the electric field, strike the matter and produce the X-ray radiation. In the experiment, we have observed emission of the characteristic and bremsstrahlung X-ray radiation of energy up to 60 keV due to the compression of piezoelectric ceramics in vacuum. This means that electrons are accelerated in the piezoelectric accelerator up to the energy at least of 60 keV. The agreement of calculated and experimental data confirms the conception. Advantages of the piezoelectric accelerator and possibilities of its development and applications are discussed.

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