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A Study on Implementation of Multistripe Crystals to Protect the Septum-Magnets and to Generate the Gamma Radiation on the U-70 Accelerator

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Recently started studies on the application of volume reflection of particles in crystals for the steering beams (for extraction and collimation of a circulating beam in accelerators). Volume reflection is more efficient than channeling, but requires amplification of the deflection angle by applying multicrystals. The report discusses two new applications of multicrystals made like multistripe structures: 1. The property of effective deflection of particle beam was used to protect the septum-magnets of the U-70 in the process of extraction of the proton beam with energy of 50 GeV. 2. The possibility of generation of gamma radiation was studied in the secondary electron beam with energy of 7 GeV. In both cases, promising preliminary data were obtained. The work is supported by Russian Science Foundation (grant 17-12-01532).

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