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Study of crystal extraction of circulating beam from the U-70 at injection energy.

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Abstract: Phenomenon of deflection of charged particle beam due to channeling in a bent crystal is good investigated and successfully applied for extraction of beam in high-energy accelerators, at the energies of about 10 GeV and higher. However, a big practical interest presents the task of bending and extraction of charged particles with energies below 1 GeV, for example, production of ultrastable beams of low emittance for medical and biological applications. That's why two novel crystal technique, namely: thin sequential straight crystal targets, and array of short bent crystal strips were investigated in this report as elements for extraction of beam from U-70 accelerator. Experimental results were obtained for extraction of 1.3 GeV protons and six-charged carbon ions with energy of 450 MeV/nuleon.

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