

Joint seminar of the NPI of the CAS

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Tomáš Matlocha (NPI, The Department of Accelerators): Enhanced beam extraction system at the U-120M cyclotron

Abstract:

In 2022, the U-120M cyclotron underwent a long operational shutdown. This shutdown provided a unique opportunity to install also new components that are foreseen to be used by the future extraction system. Unlike the current fully electrostatic extraction system, the future system should be based on a combination of electrostatic deflectors and magnetic channels. For this purpose, new harmonic coils necessary for efficient extraction of positively accelerated ions were installed on a radius of 50 cm.

During the seminar, the cyclotron repair process, including the installation of the new harmonic coils in the vacuum chamber of the accelerator, will be presented. Further, we will discuss the future extraction system that will be able to perform the extraction using the precession as well as the linear integer resonance methods. The basic properties of these two approaches will be compared, and their advantages and limitations will be presented. Finally, an estimation of the efficiency of the future extraction system will be made.