

A Facility for High-Precision Absolute Energy Measurement using the K-Edge Absorption Phenomenon for Linear Accelerators,
I.P. KARABEKOV and S.I. KARABEKIAN, Yerevan Physics Institute, Yerevan, Armenia - A simple facility for absolute energy measurement with an accuracy of $\Delta E \approx 10^{-4} E_0$ by direct measurement of the bend angle in a high-precision-mapped magnet dipole used for beam transportation system by two opposite short (about 2 mm long) high-field-intensity permanent magnets installed at each end and creating two swaths of hard x-ray synchrotron radiation for linear electron accelerators and recirculators is presented. Two perfect crystals mounted on a platform symmetrically with respect to the axis of rotation are used for diffraction of narrow (horizontal divergence of the swaths at chosen wavelength is about 10^{-5} rad) hard x-ray beams in the bending (horizontal) plane. By rocking the platform, one can reach a point of observation of K-edge absorption for a chosen substance at each SR beam. It is shown that the rocking angle of the platform measured with an accuracy of a few arc sec is equal to the bend angle of the electrons. The limitation of the accuracy of absolute energy measurement for the entire installation by the sources of statistical and systematic error are discussed.