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PAPER TITLE

IHEP's Set of Neutron Reference Fields

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ABSTRACT

Measured spectra for 8 neutron fields and superposition method for dosimetric apparatus calibration with the help of these neutron fields are presented. 7 of these fields are based on ^{252}Cf and Pu-α-Be sources and the 8th one is the field of high energy leakage neutrons behind the biological shielding of proton synchrotron on 70 GeV. Mean energy of the neutron spectra of these fields are from 0.11 MeV to 3.0 MeV and 79 MeV, correspondently. The neutron spectra of the first 7 fields have been measured with the help of Bonner spectrometer and scintillation spectrometer, based on single crystal of stilbene. The 8th spectrum have been measured with the help of Bonner spectrometer supplemented by modified detector with 5 cm copper converter and by scintillation detector which detected an inelastic reactions ^{12}C(n,α) ^{9}Be and ^{12}C(n,n)3α. It has been shown that the superposition method allows one to calibrate dosimetric detectors more correctly than commonly used techniques.