Contribution ID: **66** Type: **Flash presentation**

A New Irradiation Workbench Enabling Quantitative Measurements in the Fast and Thermal Neutron and Photon Field of a Polyethylene Shielded Americium-Beryllium Source

Tuesday 26 September 2023 09:45 (15 minutes)

The construction of a new irradiation workbench is almost completed. Once finished, it will enable the conduct of quantitative neutron and photon experiments in the field of an americium-beryllium source. Therefore, different radiation field quantities, i.e. spectral fluence rates, fluence rates, ambient dose rate equivalents and directional dose rate equivalents, were determined for the individual fast and thermal neutron and photon components of the source radiation field. This was done by means of evaluated detector measurements and FLUKA simulations at given distances from the source. All results all catalogued in an own database.

The presentation only concentrates on the quantification of the fast neutron field by means of spectral fluence rates. Methods include the calibration of a stilbene detector for neutron energy depositions using a pulse-shape-discrimination-aided Time-of-Flight setup and the unfolding of pulse-charge spectra via a simple unfolding technique. The validity of the results determined by measurements will be discussed by a comparison to analogue FLUKA simulation data.

Author: MELZER, Vincent (TU Dresden)

Co-author: Mr KORMOLL, Thomas (TU Dresden)

Presenter: MELZER, Vincent (TU Dresden)

Session Classification: Flash presentation of the participants

Track Classification: Flash presentations