

## Monte Carlo approach for the determination of the angular dependence of an extrapolation chamber response

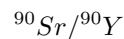
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The angular dependence of an extrapolation chamber response is reported. The determination of the angular factors were carried out using the MCNP Monte Carlo Method. To determine the angular dependence, the PTW type 23392 extrapolation chamber of the Laboratory for Calibration of Instruments (LCI/IPEN) was simulated. The experiments were performed for the radiation fields of beta secondary standard BSS2 system sources. For the



source, the calibration distance of 11 cm without the beam flattening filter was used. For the



and



sources, the distances of 30 cm and 20 cm with the filter were used, respectively. The simulations were carried out by rotating the extrapolation chamber around the reference axis for angles between

$$-90^\circ$$

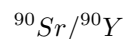
and

$$90^\circ$$

, in steps of

$$5^\circ$$

. For the



source the angular dependence factor is greater than 1, predominating the dose build-up effect up to

$$60^\circ$$

and

$$-60^\circ$$

, and the factor is less than 1 for the other angles, prevailing the absorption of beta particles. For the



and



sources, the angular dependence factor is less than 1 for all angles, predominating the absorption of beta particles too. The determined angular factors are in good agreement with the international report ISO 6980.