

[AbstractID: 1345 Title: Experimental determination of the pwall correction factor for  \$^{60}\text{Co}\$  gamma ray beams for Scanditronix-Wellhöfer plane-parallel ionization chambers](#)

The wall perturbation correction factor  $p_{\text{wall}}$  in  $^{60}\text{Co}$  beams is determined experimentally for Scanditronix-Wellhöfer PPC-40 and PPC-05 plane-parallel ionization chambers. Four ionization chambers of the type PPC-40, five of the type PPC-05, and one each for PTW Roos 34001 and PTB Roos FK6 chamber are used for measurements. The procedure is to compare the absorbed dose to water,  $D_{\text{w,Q}}$ , determined using an unknown plane-parallel chamber (i.e., PPC-40) with that of a reference plane-parallel chamber (i.e., PTW Roos), both in a PMMA phantom in a  $^{60}\text{Co}$  beam and in a water phantom irradiated by a 20 MeV electron beam. The recommendations of the IAEA TRS-398 Code of Practice are followed for the determination of  $D_{\text{w,Q}}$ . The PTW Roos chamber was calibrated in terms of absorbed dose to water in a series of electron beams at the NPL and in a  $^{60}\text{Co}$  beam at the IAEA SSDL traceable to BIPM. The procedure yields a  $p_{\text{wall}}$  value of 1.021 for PPC-40, 0.985 for PPC-05, 1.013 for PTW Roos and 1.017 for PTB Roos chamber. The chamber-to-chamber variation in  $p_{\text{wall}}$  is found to be within a maximum difference of 0.15% for the PPC-40 and 0.8% for the PPC-05 chamber.  $p_{\text{wall}}$  values for the PTW and PTB Roos chambers were measured as a check of consistency for the overall procedure and was found to be consistent with the values reported by Palm et al (viz., 1.014 for PTW Roos). The combined standard uncertainty for  $p_{\text{wall}}$  is estimated to be 0.9%.

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