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# A NEW MINI-EXTRAPOLATION CHAMBER FOR BETA SOURCE UNIFORMITY MEASUREMENTS

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According to recent international recommendations, beta particle sources should be specified in terms of absorbed dose rates to water at the reference point. However, because of the clinical use of these sources, additional information should be supplied in the calibration reports. This additional information include the source uniformity. A new small volume extrapolation chamber was designed and constructed at the Calibration Laboratory at Instituto de Pesquisas Energéticas e Nucleares, IPEN, Brazil, for the calibration of $^{90}Sr+^{90}Y$ ophthalmic plaques. This chamber can be used as a primary standard for the calibration of this type of source. Recent additional studies showed the feasibility of the utilization of this chamber to perform source uniformity measurements. Because of the small effective electrode area, it is possible to perform independent measurements by varying the chamber position by small steps. The aim of the present work was to study the uniformity of a $^{90}Sr+^{90}Y$ plane ophthalmic plaque utilizing the mini-extrapolation chamber developed at IPEN. The uniformity measurements were performed by varying the chamber position by steps of 2 mm in the source central axis (x-and y-directions) and by varying the chamber position off-axis by 3 mm steps. The results obtained showed that this small volume chamber can be used for this purpose with a great advantage: it is a direct method, being unnecessary a previously calibration of the measurement device in relation to a reference instrument, and it provides real-time results, reducing the time necessary for the study and the determination of the uncertainties related to the measurements.