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Absolute Dose Distribution Measurements Of Beta Sources Using A Scintillating Fiber Based Detector LAWRENCE TYNES, Hampton University, FOR CAMI COLLABORATION — Brachytherapy using catheter based high dose rate β sources has taken nowadays an important role in out-patient cancer treatments. At the present time, there is no detector system which can record accurate quantitative doses and spatial information for Brachytherapy sources. This is partly because of the short-range of the low energy beta emission of these sources (having typically an average energy of a few hundreds of keV), and the resolution limitation of existing extrapolation chambers and radiochromatic-dye films (currently the preferred method used). For the latter, transfer of data from one method to the other can lead to a loss of accuracy as high as 7%, well beyond the required 2% limits of current protocols. We have developed a scintillating fiber based beta detector prototype which will provide solution to this problem. It is composed of an array of 0.5 mm^2 and 1 mm^2 fibers optically coupled to photo-multiplier tubes for photon-to-current conversion. Preliminary results from high dose rate $^{90}Sr/^{90}Y$ and ^{32}Ru sources comparing film dosimetry, well chambers, and our scintillating fiber based detector will be presented.

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