

## OPTIMIZATION OF DOSE DISTRIBUTION IN TOTAL SKIN IRRADIATION WITH ELECTRON BEAM

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**Body of Abstract:** This work describes a treatment technique using total skin irradiation using a 4 MeV electrons beam, the dosimetric process applied in the treatment and the comparison with data obtained by means of Monte Carlo simulation. This method intends to improve the uniformity of the dose in the patient, to reduce the problems with the overlapping treatment fields, that occurs in conventional treatment that uses 1m of focus-skin distance as well to reduce the patient treatment time, in order to obtain a uniform dose distribution in the patient. It was simulated different radiation incidence angles between each beam fixing the distance, which is characteristic of each treatment room. The patient is placed on a rotate base stand up and perpendicular to the beam, distant 2.83m from the gantry and he assumes successively 6 positions with 60 degrees of interval between the rotations. In each position the patient receives a couple of beams (the beam angulation is 19.5 degrees above the transversal axis in the middle of the patient and 19.5 degrees below it). The delivered doses in the patient were measured with dosimetric films placed in an anthropomorphic phantom and with thermoluminescent dosimeters placed on patient's skin surface. The delivered doses in the treatment plane were compared to the simulated data obtained from the Monte Carlo Code MCNP-4B.

The obtained results are summarized as follows:

1) The simulated data using Monte Carlo technique showed good agreement with those measured with dosimetric films.

2) The dose distributions in the phantom were found according to that described in the international protocols as AAPM No 23, indicating that is possible to utilize this technique in the treatments using total skin irradiation with electron beam.