

عنوان مقاله:

Measurements of Photon Beam Flattening Filter Using an Anisotropic Analytical Algorithm and Electron Beam Employing Electron Monte Carlo

محل انتشار:

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خلاصه مقاله:

Introduction: This study aimed to report the measurement of photon and electron beams to configure the Analytical Anisotropic Algorithm and Electron Monte Carlo used in clinical treatment. Material and Methods: All measurements were performed in a large water phantom using a 3-dimensional scanning system (PTW, Germany). For photon beams, the data were measured with a 0.125cc cylindrical chamber. For electron, the data were performed with a Roos chamber. Results: In photon beams, flatness and symmetry for reference field size 10x10cm² were within the tolerance intervals. Flatness were 0.79% and 1.55% for X6MV and X18MV, respectively. Symmetry were 0.57 and 0.25 for X6MV and X18MV, respectively. The output factor vary between 0.83 and 1.11 for X6MV. Moreover, it varies between 0.74 and 1.09 for X18MV. The leaf transmission factors were 0.97% for X6MV and 1.14% for X18MV. The DLG were 1.31 and 1.34 for X6MV and X18MV, respectively. For electron beams, the quality index R50 for applicator 15x15cm² were in the tolerance. Maximum depth dose for 6, 9, 12, 16 and 20MeV were 1.2, 1.9, 2.7, 2.99 and 2.4cm, respectively. Bremsstrahlung tail were 6MeV-2.86cm, 9MeV-4.32cm, 12MeV-5.96cm, 16MeV-7.93cm, and 20MeV-10.08cm per energy levels. Conclusion: The obtained results and international recommendations were in a good agreement

کلمات کلیدی:

Linear accelerator Algorithm, Monte Carlo Method Radiotherapy

