

## عنوان مقاله:

Monte Carlo Simulation of Siemens Primus plus Linac for 6 and 18 MV Photon Beams

## محل انتشار:

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## خلاصه مقاله:

**Objective:** The aim of the present study is to simulate 6 MV and 18 MV photon beam energies of a Siemens Primus Plus medical linear accelerator (Linac) and to verify the simulation by comparing the results with the measured data. **Methods:** The main components of the head of Siemens Primus Plus linac were simulated using MCNPX Monte Carlo (MC) code. To verify the results, experimental data of percentage depth dose (PDD) and beam dose profile for  $5 \text{ cm}^2$ ,  $10 \text{ cm}^2$  and  $20 \text{ cm}^2$  field sizes were measured and compared with simulation results. Moreover, gamma function was used to compare the measurement and simulation data. **Results:** The results show a good agreement, within 1%, was observed between the data calculated by the simulations and those obtained by measurement for 6 MV photon beam, while it was within 2% for 18 MV photon beam, except in the build-up region for both beams. Gamma index values were less than unity in most data points for all the mentioned energies and fields. To calculate the dose in the phantom, cells were selected in different modes, one of the modes due to the lack of dose gradient and overlapping, produced better results than others produce. **Conclusion:** There was good settlement between measured and MC simulation values in this research. The simulation programs can be used for photon modes of Siemens Primus Plus linac in conditions in which it is not possible to perform experimental measurements

## کلمات کلیدی:

Radiotherapy, Siemens Primus plus Linac, MC Simulation, 6 and 18 MV Photon Beams, Gamma Function

## لینک ثابت مقاله در پایگاه سیویلیکا:

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