



Contribution ID: 169

Type: Poster

The stopping power calculation of water and lung for protons in radiotherapy

Thursday, 3 September 2015 16:30 (1h 30m)

This study aims to calculate the energy losses in unit length of protons during their movement within water and lung by using two analytical equations. One of the equations used in this study is the mass stopping power equation suggested by Bethe-Bloch (1930-1933) and modified by Tsoulfanidis (1995) and a new approach has been suggested in the other one. Methodology: The suggested new approach was obtained by substituting effective z , Z and I^* values into the equation reported by Tsoulfanidis. Although the energy range of protons used in the radiotherapy is 75-250 MeV, in this study 0.001-250 MeV energy ranges were performed to identify the stopping power. In addition, a new empirical relation was given to simplify the expressions for stopping power. The results were compared with the other researcher's results. The suggested approach for the mass stopping power (Equation 2) can be used for both high- and low energy protons. Stopping power values of protons should be especially useful in such medical fields as radiobiology, biomedical applications, radiotherapy and so on.

Primary author: DİLEK, Rıza (DİLEK)

Co-author: Prof. ÖKTEM, Yeşim (ÖKTEM)

Presenter: DİLEK, Rıza (DİLEK)

Session Classification: Poster