

ESTIMATION OF THE CONTRIBUTION OF SECONDARY NEUTRONS TO THE ABSORBED DOSE DURING THE OPERATION OF MEDICAL LINAC

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Bremsstrahlung obtained during the operation of medical linac is used in the treatment of various types of cancer. At photon energies above 8 MeV, secondary neutrons are produced as a result of photonuclear reactions. This radiation is able to cause additional dose load on the patient, as well as unacceptable working conditions for personnel.

The contribution to the dose due to secondary neutrons is not estimated and is not taken into account in modern planning systems. The relatively small contribution of photoneutrons to the radiation flux leads to a large increase in the dose in the irradiated tissues, which is unacceptable in the treatment of oncology.

The head of a medical linear accelerator is modeled in order to estimate the contribution of secondary particles to the dose. The model is validated based on the depth dose distribution in water. As the result of the study, the spectra of secondary neutrons were obtained, their average energy was estimated, and the contribution of photoneutron radiation to the dose was calculated.

The speaker is a student or young scientist

Yes

Section

1. Nuclear technology and methods in medicine, radioecology

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