

Induced radioactivity - important effect of hadron therapy

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The increasing popularity of hadron therapy requires to look closely at the secondary effects of this tumor treatment method to verify its influence on therapeutic effects, especially for heavy ions like alpha, carbon, nitrogen and oxygen ions up to 400 MeV/u. The most important issues are: a) measurement of the cross-sections for all reactions which could occur during irradiation of human's body and b) the validation of the Monte Carlo models that are used for therapy planning and dose calculations. Achieving those goals will improve the accuracy of estimation of the received dose by the patient during therapy. Moreover the measurements will also show how induced radioactivity can impact on the therapeutic effects what was shown in experiments when adding a little amount of ¹⁰Be and ¹¹Be to tissue increase the effectiveness of irradiation [1].

The poster will present the results of the measurements which were done last year at the Institute of Nuclear Physics, PAS, Kraków, along with Monte Carlo simulations and plans (propositions) for further experiments.

Bibliography

[1] G. A. P. Cirrone et al. First experimental proof of Proton Boron Capture Therapy (PBCT) to enhance proton therapy effectiveness. Scientific Reports 8:1141, 2018.