Contribution ID: 415

Type: Oral talk (15 min + 5 min questions)

## PRODUCTION OF MEDICAL RADIONUCLIDE 82RB USING PHOTONUCLEAR REACTIONS

Friday, 15 July 2022 15:30 (10 minutes)

The 82Rb isotope has found application in medicine, where it is used to diagnose diseases of the heart and blood vessels. Being a biological analogue of kalium, rubidium is absorbed by tissues, after which the absorption pattern is visualized by positron emission tomography. A very short lifetime forces the use of mobile 82Rb generators, in which the isotope is produced during the decay of 82Sr and is isolated chemically immediately before the procedure.

The method of induced activity was used to study photonuclear reactions on a natural mixture of strontium isotopes. The experiment was performed on a bremsstrahlung of an RM-55 electron accelerator at an electron energy of 55 MeV. The study examined the possibility of producing 82Sr isotope in photonuclear reactions on a natural mixture of strontium isotopes. 82Sr has no gamma lines; therefore, it is not possible to experimentally determine the yield of this isotope by the usual method from the peak in the residual activity spectrum. Due to the large difference in the half-lives of 82Sr and 82Rb, which decays this isotope (25.55 days and 1.27 minutes, respectively), it is possible to determine the experimentally determine the yield of 82Rb impossible due to the fact that the target transfer time from the accelerator to the detector is several times the half-life of 82Rb.

Experimental data on the cross-sections of photoproton reactions on Sr isotopes are not available in the literature. The yields of the formation of 83,85,85m,87mSr isotopes as a result of  $natSr(\gamma, in)$  reactions, the target nuclide 82Rb and the side nuclides 81,82m,83,84,86,86mRb as a result of  $natSr(\gamma, in1p)$  reactions were measured. The experimentally obtained yields of photonuclear reactions are compared with the yields calculated using theoretical cross-sections of photonuclear reactions from and the TALYS program.

## The speaker is a student or young scientist

Yes

## Section

1. Nuclear technology and methods in medicine, radioecology

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Session Classification: Nuclear technology and methods in medicine, radioecology.