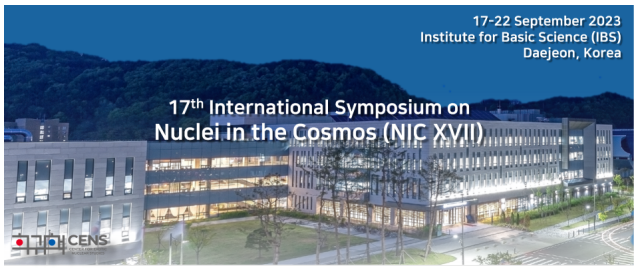

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Experimental integral cross-sections of photonuclear reactions on proton-rich ^{113}In and ^{114}Sn nuclei for cosmic nucleosynthesis modelling

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Photonuclear reactions play an essential role in nucleosynthesis taking place in all sites, e.g., stars, novae, and interstellar gas media. Especially important these reactions are for formation of isotopes heavier than iron. The proton-rich p-nuclei, such as ^{114}Sn, and ^{113}In, can be created only via a complex sequence of radiative processes, involving both emission and capture of γ-rays [1]. Correct modelling of cosmic nucleosynthesis processes requires a wealth of confident experimental data both about nuclear reactions, and nuclear structure of involved nuclei.
Presented work is a continuation of our earlier studies of photonuclear reactions involving p-nuclei [2]. Yields of the $^{114}Sn(\gamma, n)^{113}Sn$ photonuclear reaction were measured in the bremsstrahlung energy range from 11.5 to 14 MeV with a step of 0.5 MeV using Linear Electron Accelerator of the National Science Centre "Kharkiv Institute of Physics and Technology" (Ukraine). For $^{113}In(\gamma, \gamma')^{113}In$ and $^{113}In(\gamma, n)^{112}In$ photonuclear reactions in the bremsstrahlung energy range from 7 to 23 MeV with a step of 2 MeV, the experiment was carried out using Microtron M-25 of the Institute of Nuclear Physics (Czech Republic). High-resolution gamma spectrometers based on HPGe detectors were used to measure induced activities in both experiments.
The results of experimental measurements are compared with the data available in the literature and with the nuclear reaction statistical model calculations obtained using TALYS 1.95 [3] computer codes.

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