

## Cross section measurement of the $^{13}\text{C}(\alpha,n)^{16}\text{O}$ reaction in the 2-6.2 MeV $\alpha$ -particle energy range

Monday 20 September 2021 16:25 (25 minutes)

The  $^{13}\text{C}(\alpha,n)^{16}\text{O}$  reaction cross section plays an important role as the background source in the geoneutrinos measurements and as the source of neutrons for the s-process in nuclear nucleosynthesis. The cross section for its reverse reaction is important for the number of practical applications, including the design of the nuclear power plants, the assessment of helium accumulation in structural materials, and dosimetry. The sets of experimental data on this reaction cross section, as well as the evaluation given in different libraries, differ significantly (20-50%) from each other. The report presents the results of measurements performed by the time-of-flight method on a tandem accelerator at IPPE JSC. The thickness and characteristics of the  $^{13}\text{C}$  target, as well as the state of the target during measurements, were determined by ion beam analysis methods. The analysis of the influence of multiply scattered neutrons on the measurement results is carried out. The experimental data obtained are compared with the results of other authors and with the evaluated cross sections from the nuclear data libraries.

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**Session Classification:** Section 2. Experimental and theoretical studies of nuclear reactions

**Track Classification:** Section 2. Experimental and theoretical studies of nuclear reactions.