

Measurement of the cross section for the $^{13}\text{C}(\alpha,n)^{16}\text{O}$ reaction and determination of the cross section for the $^{16}\text{O}(n,\alpha)^{13}\text{C}$ reaction

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The angular dependence of the differential cross-sections for the $^{13}\text{C}(\alpha,n)^{16}\text{O}$ reaction was measured in the energy range of 2.0-6.2 MeV using the time-of-flight method for separating neutrons corresponding to the ground state of the residual nucleus. The integrated total cross-sections were derived from the measured data and the cross-sections for the $^{16}\text{O}(n,\alpha)^{13}\text{C}$ reaction were determined using the reciprocity theorem. The cross-sections obtained for the reaction $^{16}\text{O}(n,\alpha)^{13}\text{C}$ support the evaluation given in the ENDF/B-VIII.0 library.

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