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Efficiency determination of the neutron detector ball at the S-DALINAC* — ●MAKSYM CHERNYKH, ANNA MARIA HEILMANN, PETER VON NEUMANN-COSEL, and ACHIM RICHTER — Institut für Kernphysik, Technische Universität Darmstadt

Nuclear incompressibility (k_∞) is a fundamental quantity defining the equation of state of nuclear matter. It can be determined by studying isoscalar giant monopole and dipole resonance using coincidence inelastic electron scattering of the type $(e, e'n)$. For that purpose a neutron detector ball was newly designed and built at the S-DALINAC [1]. It consists of 13 BC501A scintillation cells and covers a solid angle up to 1.3π . Before the first experiments start, the properties of the new detector need to be determined. This work represents the neutron efficiency determination of the scintillation cells. For the measurements a ^{252}Cf source with a well known neutron energy distribution was used. The neutron energy was determined using the neutron time of flight relative to the fission fragments. The obtained results have been compared with Monte Carlo simulations using the NRESP code.

[1] M. Chernykh, Doctoral thesis D17, TU Darmstadt (2008).

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