

SYMMETRY BREAKING EFFECTS IN THE INTERACTION OF SLOW NEUTRONS WITH LEAD NUCLEUS

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Spatial parity breaking effects in the interaction of slow and resonant neutrons with Lead nucleus will be investigated. For scattering and capture processes, spin rotation, asymmetry of emitted neutrons and asymmetry of emitted gamma quanta were evaluated and compared with existing experimental data. Parity breaking effects were evaluated in the frame of the formalism of the mixing states of compound nucleus with the same spin and opposite parities [1]. Applying the approach described in [2], from theoretical evaluations and related scattering and capture experimental data, weak matrix element was extracted. Matrix element of weak non leptonic interaction is usually of order of meV and for slow neutrons, parity violation effects are of order of 10^{-6} - 10^{-4} and lower. Similar values were obtained in the analysis of parity violation effects on other processes and nuclei [2]. From obtained results, the existence of a new negative resonance of compound nucleus near the neutron threshold it is confirmed [3].

Symmetry breaking effects in the scattering and capture process on Lead nucleus are planned to be measured at basic facilities from FLNP JINR Dubna and from other neutrons research centers from Russia.

REFERENCES

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Section

Experimental and theoretical studies of nuclear reactions

Primary author: Dr ОИПЕА, Иоан (Joint Institute for Nuclear Research (JINR) Frank Laboratory for Neutron Physics (FLNP))

Co-authors: OPREA, Cristiana (National College "Emanuil Gojdu" Oradea Romania); KUZNETSOV, Valery L (Frank Laboratory of Neutron Physics (FLNP) Joint Institute for Nuclear Researches (JINR) Dubna Moscow Region Russian Federation); СЕДЫШЕВ, Павел (Frank Laboratory of Neutron Physics (FLNP) Joint Institute for Nuclear Researches (JINR) Dubna Moscow Region Russian Federation)

Presenter: Dr ОИПЕА, Иоан (Joint Institute for Nuclear Research (JINR) Frank Laboratory for Neutron Physics (FLNP))

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