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**RESEARCH OF NEUTRON INTERACTION WITH MATTER
UNDER HIGH DENSITY INTERACTION**

**Part I. Cross section of the neutron interaction with matter
under high density interaction**

Neutrons interaction with matter under high density interactions (DI) was considered. It was shown that under neutron cross section measurement with high DI and production as result of interaction neutrons with matter of the second states with great value of such parameters as neutrons cross section, yield and life time probability of the interaction neutron with matter depends on DI and considered parameters. The expressions, related neutrons transmission, cross section and change of the neutrons transmission through the samples pair from different matters, which simultaneously placed on neutron beam, under the change of neutrons transmission sequence through them (transmission asymmetry) with DI and considered parameters of the second states were obtained. Method for revelation for the cross section change under DI change and improved experimental installation were described.

Keywords: density interaction, cross section, yield, time of life, transmission asymmetry, neutron, reactor, detector, filter, stability.