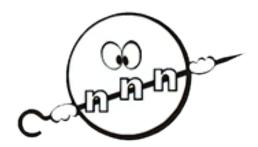
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Measurement Thermal Neutron Capture Cross Section and Resonance Integral of 94Zr(n, γ)95Zr Reaction using Intense Resonance Neutron Source "IREN"

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The thermal capture cross section and resonance intergal for the $94Zr(n,\gamma)$ reaction were measured relatively to that of $197Au(n,\gamma)198Au$ by activation method using IREN facility of the Joint Institute for Nuclear Research (JINR) [1]. Neutrons are produced via the interaction of electron beam with a tungsten target. The induced activities in activated samples were measured by a high-resolution HPGe gamma spectrometer. The necessary correction factors including neutron thermal and epithermal self-shielding effects, the γ -ray self-absorption and other were taken into account to improve the accuracy of the results [2]. Our obtained value of thermal neutron cross-section for $94Zr(n,\gamma)95Zr$ reaction is 0.0516 ± 0.00395 barn. The differences between this value and most of that listed in the international nuclear data libraries JENDL-4.0, JEFF-3.2, ENDF/B-VII.1 are less than 4%. The value of the resonance integral measured by us is 0.2764 ± 0.084 barn, which is 14% difference from the mean of previously reported data.

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