Experimental Neutron Flux Measurement at Jordan Subcritical Assembly (JSA)

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Abstract

Jordan Subcritical Assembly (JSA) is the main education, training and research facility at the Department of Nuclear Engineering at Jordan University of Science and Technology (JUST). As a nuclear research facility, it basically serves as a neutron source. Therefore, it is very important to characterize the neutron environment at JSA.

The work presented in this report is the experimental neutron flux determination at JSA. The method of multi-foil neutron activation was adopted. . ^{115}In foils were selected to measure the activation reaction rates at the experimental channels of JSA. The absolute axial and radial reaction rates were measured using a HPGe measurement system. The reaction rate values were taken by averaging the measured counts for three photo-peaks of ^{116m}In. The experimental results were compared to the calculated flux distribution using the Monte Carlo Code MCNP-5, and they were found to be in good agreement.