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NEUTRON SCATTERING FROM ELEMENTAL URANIUM AND THORIUM

by

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ABSTRACT

Differential neutron-scattering cross sections of elemental uranium and thorium are measured from ≈ 4.5 to 10.0 MeV in steps of ≈ 0.5 MeV. Forty or more differential values are obtained at each incident energy, distributed between $\approx 17^\circ$ and 160° . Scattered-neutron resolutions are carefully defined to encompass contributions from the first four members of the ground-state rotational band (0^+ g.s., 2^+ , 4^+ and 6^+ states). The experimental results are interpreted in the context of coupled-channels rotational models, and comparisons made with the respective ENDF/B-VI evaluated files. These comparisons suggest some modifications of the ENDF/B-VI ^{238}U and ^{232}Th evaluations.