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FAST NEUTRON SCATTERING NEAR SHELL CLOSURES:- SCANDIUM

by

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ABSTRACT

Neutron differential elastic- and inelastic-scattering cross sections are measured from from ≈ 1.5 to 10 MeV with sufficient detail to define the energy-averaged behavior of the scattering processes. Neutrons corresponding to excitations of 465 ± 23 , 737 ± 20 , 1017 ± 34 , 1251 ± 20 , 1432 ± 23 and 1692 ± 25 keV are observed. It is shown that the observables, including the absorption cross section, are reasonably described with a conventional optical-statistical model having energy-dependent geometric parameters. These energy dependencies are alleviated when the model is extended to include the contributions of the dispersion relationship. The model parameters are conventional, with no indication of anomalous behavior of the neutron interaction with ^{45}Sc , five nucleons from the doubly closed shell at ^{40}Ca .