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Neutron Production from 710-MeV Alphas in Thick Targets. R. CECIL, B. ANDERSON, A. BALDWIN, R. MADEY, Kent State U.\*; A. GALONSKY, P. MILLER, L. YOUNG, Michigan State U.†; F. WATERMAN, U. of Chicago.--We measured the spectra and yields of neutrons produced at nine angles from 0° to 150° by 710-MeV alphas stopping in targets of C, Pb, H<sub>2</sub>O, and steel. A telescope counted each alpha particle in the beam at the Space Radiation Effects Laboratory and provided a timing signal to measure the neutron flight-time to one of six organic scintillation counters operated in a multiplexing mode with a PDP-11/15 computer. Neutron yields above about 8 MeV were measured with five NE-102 plastic scintillators with flight paths of 5 m at forward angles, 3 m at 60°, and 2 m for angles greater than 60°; neutron yields from about 3 to 10 MeV were measured with a small (2 in. diam x 2 in. long) NE-213 liquid scintillator (with n-γ pulse-shape discrimination) at a distance of 1 m. The energy resolution varied from 8% at 3 MeV to about 18% at 300 MeV. At 0° and 6°, we observed neutron yield above the 178 MeV kinetic energy per nucleon of the incident alpha up to about 300 MeV, and a peak at about 115 MeV which is more pronounced in the light targets.

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