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Neutron Spectra Above 1 MeV from Nuclear Capture of Negative Pions. T. VILAITHONG, B. ANDERSON, A. BALDWIN, R. MADEY, T. WITTEN, Kent State U.*; and F. WATERMAN, U. of Chicago.---We measured the energy spectra of neutrons above 1 MeV emitted following nuclear capture of negative pions stopped in C, N, O, Aℓ, Cu, Ta, Pb, Bi, a tissue-equivalent liquid, and a bone-equivalent[1] powder at the Columbia University Nevis Laboratory. Energies in the region from 1 to 120 MeV were determined from the neutron flight-time between the production target and one of four organic scintillation counters. Flight paths ranged from 1.3 to 2.5 m. Timing was obtained from a pion telescope, which contained a Cerenkov counter to reject electrons. The measured spectra above 5 MeV from C, O, N, and tissue are identical within experimental errors. Also, the spectra above 5 MeV from C, N, and Pb are in reasonable agreement with the data of Hattersley et al[2], but disagree with other measurements.[3,4,5]

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[1]Calcium phosphate tribasic $[Ca_{10}(PO_4)_6\ (OH_2]$

[2]Hattersley, P.M. et al, Nucl. Phys. 67, 309 (1965).
[3]Anderson, H.L. et al, Phys. Rev. 1333, 392 (1964).
[4]Venuti, G.C. et al, Nuovo Cimento 34, 1146 (1964).
[5]Dey, W. et al, Helvetica Physica Acta 49, 778 (1976).

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