

*Ch. 10*

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Variation of Fission Fragment Kinetic  
Energy Distribution and Yield of  
Long Range Alpha Particles in  
the Resonance Neutron In-  
duced Fission of  $U^{235}$ .

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## ABSTRACT

The ratio of fission yields from thick and thin  $U^{235}$  targets was measured in the energy region where resonances can be resolved in order to measure the variation in the kinetic energy distribution of fission fragments from resonance to resonance. Also, the ternary alpha yield from a thick  $U^{235}$  sample was compared with the thin  $U^{235}$  foil binary fission yield for several resonances as a measure of the variation of the yield of ternary alphas per fission from level to level. In each set of results differences in the ratios were observed far outside the errors. The data were found to be incompatible with a single average value on the basis of a Chi-square test. The data for each set were compatible with two values of the ratios suggesting a grouping which may correspond to the two possible J values of the resonances.

Our assignments of the resonances to two groups, made on the basis of variation in kinetic energy distribution of fission fragments, agree well with the assignments made by Cowan, et. al. from the radio-

chemical measurements on symmetric fission for those levels with definite assignments in both sets of data. A definite physical interpretation of the results of relative variation of ternary alpha yield from resonance to resonance could not be made because of the lack of measurements on ternary alpha yield with a thin U target.

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