NEUTRON-INDUCED FISSION CROSS SECTION OF Pu^{240}

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The fission cross section of Pu^{240} was determined from $\text{Pu}^{240}/\text{U}^{235}$ ratio measurements for neutron energies between threshold and 8.1 Mev. U^{235} cross section values were essentially those given in a recent compilation in "Progress in Nuclear Energy".¹ The technique used was to mount the two foils back-to-back in a double ionization chamber and to irradiate them in a neutron flux of variable energy. The usual corrections for background, etc. were applied. In addition corrections were applied for the contamination of Pu^{239} and Pu^{241} in the foil and for the Pu^{240} spontaneous fission rate. The Pu^{239} cross sections used were those given in the above compilation and the Pu^{241} values were estimated.

Attached is a table of cross section values obtained. The errors indicated are a combination of statistical errors and the uncertainties in the Pu^{239} , and U^{235} values used. Near threshold, statistical uncertainties make the major contribution in the indicated errors. Above 2 Mev, the major uncertainty is the 5% estimated error in the absolute values for the U^{235} and Pu^{239} cross sections. The relative errors should be somewhat smaller than those indicated.

¹D. W. Allen and R. L. Henkel, "Progress in Nuclear Energy" Series I, Volume II (in Press).

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SUMMARY OF Pu²⁴⁰ FISSION CROSS SECTION VALUES

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<u>E_n</u>	<u>σ_f (Pu²⁴⁰)</u>
.270	.05 ± .08
.365	.17 ± .05
.490	.34 ± .06
.564	.56 ± .06
.690	.89 ± .08
.866	1.29 ± .09
1.152	1.44 ± .10
1.432	1.52
1.975	1.62 ± .10
2.488	1.68
3.025	1.66
3.542	1.65 ± .11
4.06	1.53 ± .10
4.06	1.50
4.57	1.50
5.60	1.55 ± .12
6.09	1.55
6.63	1.87
7.12	2.00 ± .13
7.62	2.08
8.12	2.12 ± .14
thin foil check	
2.488	1.68 ± .11