

^{235}U FISSION MASS AND COUNTING COMPARISON AND STANDARDIZATION*

by

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ABSTRACT

^{235}U sample mass intercomparisons carried out at different laboratories were compiled. The compilation reveals a trend with the NBS mass scale being systematically higher by 0.7% than other mass scales. Present measurements by fast neutron fission counting confirm this difference. The present measurements result in a unified mass scale with about 0.6% uncertainty. Mass scales from LASL, ANL (#1) and the University of Michigan are in excellent agreement ($\sim \pm 0.1\%$) and within $\sim 0.3\%$ of the unified mass scale. The uncertainty of the unified mass scale established with the present measurements reduced the uncertainty for ^{235}U mass and fission counting by about a factor of 2 compared with the NBS ^{235}U mass scale against which all previous comparisons were made.

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