

REACTION DIFFERENTIAL CROSS SECTIONS FROM THE LEAST-SQUARES
UNFOLDING OF RATIO DATA MEASURED IN DIVERSE NEUTRON FIELDS*

by

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ABSTRACT

A previously-described procedure for deriving threshold reaction differential cross sections from integral measurements in well-specified neutron fields by means of least-squares unfolding is extended to the analysis of ratio data. The following information is required for the least-squares analysis of ratio data: i) shape specifications for the neutron spectra and the associated uncertainties and correlations, ii) standard reaction group cross section values and their covariance matrix, iii) the ratio data and their covariance matrix, and iv) the a priori group cross sections and their covariance matrix. Knowledge of the absolute neutron fluence is not required. In order to illustrate this method, a special class of ratio measurements is investigated in detail and numerical analysis is performed for a hypothetical simulated experiment.

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