

V.C.3. Unweighted Energy Average

The unweighted energy average is defined as

$$\bar{\sigma}_{x,i} = \int_{E_i^g}^{E_{i+1}^g} \sigma_x(E) dE \bigg/ \int_{E_i^g}^{E_{i+1}^g} dE \quad . \quad (\text{V C3.1})$$

This form is mathematically equivalent to the limit of Eq. (V C2.2) in which C is constant and σ_0 is effectively infinite. However, it would be highly inefficient to use Eq. (V C2.1) to calculate Eq. (V C3.1), because in the Bondarenko method, (a) the total cross section (as well as the cross section of interest) must be computed and (b) not only the numerator but also the denominator requires numerical integration. Hence, the unweighted energy average is calculated via a separate implementation in SAMMY.

The multigroup covariance matrix is calculated in the same fashion as described in Section V.C.2 for the Bondarenko averaging scheme.

Input details are presented in Section VI.F.1. For examples, see test cases tr071, tr085, and tr146.