Letters to the Editor

Comments on "Anisotropic Scattering Coefficients in the Constant Cross-Section Transport Equation"

In a recent paper[1], Murray et al. have calculated the coefficient of the scattering function in the laboratory system assuming isotropic (elastic slowing down) collisions in the center-of-mass system. It is immediately apparent that their coefficient b_L is identical with the matrix T_{LO} defined by Zweifel and Hurwitz[2]. In particular, the computation scheme suggested by them for calculating the explicit form of T_{LO} (or the b_L) seems somewhat simpler than that proposed by Murray et al.[1]. The scheme of Zweifel and Hurwitz[2] expresses T_{LO} as

$$T_{LO} = \frac{(1+\gamma)^2}{2\gamma} \int_0^{\ln 1/\alpha} \exp(-v) P_L\left(\frac{1}{2\gamma}\left[(1+\gamma)\exp(-v/2) - (1-\gamma)\exp(v/2)\right]\right) dv \quad . \tag{1}$$

Thus, any of the T_{LO} may be calculated as the sum of simple exponential integrals [in Eq. (1), $\gamma = 1/A$].

The work by Murray et al.[1] has the distinct advantage that it gives an explicit expression for T_{LO} [Eq. (11)], as well as convenient expressions in powers of γ. It may be mentioned that similar coefficients have been tabulated also in ANL-5800.

P. F. Zweifel

Department of Nuclear Engineering
The University of Michigan
Ann Arbor, Michigan

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[1]RAYMOND L. MURRAY, CHARLES E. SIEWERT, and WALTER J. HARRINGTON, *Nucl. Sci. Eng.*, **28**, 124 (1967).

[2]P. F. ZWEIFEL and H. HURWITZ, Jr., *J. Appl. Phys.*, **25**, 1291 (1954). See also JOEL H. FERZIGER and P. F. ZWEIFEL, *The Theory of Neutron Slowing Down in Reactors*, pp. 55 ff, Pergamon Press, Oxford (1966).