REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

47[A, S].—A. F. Nikiforov, V. B. Uvarov & Yu. L. Levitan, *Tables of Racah Coefficients*, translated by Prasenjit Basu, Pergamon Press, New York, 1965, xx + 319 pp., 26 cm. Price $15.00.

Racah coefficients occur in the quantum theory of angular momentum and may be briefly characterized as the matrix elements of invariant operators formed in the coupling of three tensor operators. These coefficients are of great importance in atomic and nuclear spectroscopy, in angular correlation theory, and in the quantum theory of angular momentum itself. The importance of the Racah coefficient may be judged from the fact that some 15 more or less extensive tabulations have appeared since 1952. The two most extensive recent tabulations (besides the compilation under review) are *The 3-j and 6-j Symbols*, by Rotenberg, et al., Technology Press, Cambridge, 1959, and *Tables of the Racah Coefficients*, Ishidzu, et al., Pan-Pacific Press, Tokyo, 1960 (English).

The present tabulation gives the Racah coefficient $W(abcd; ef)$ as 8-place decimal fractions, and has as its chief merit the extensive range of variables. The tables are divided into three sections:

  1. a, b, c, d half-integral ($\frac{1}{2}(1) \frac{17}{2}$); $e, f = 0(1)17$, (153 tables),
  2. a, b, c, d integral $1(1)9$; $e, f = 1(1)18$ (162 tables),
  3. a, c, e half-integral: $a, c = \frac{1}{2}(1) \frac{17}{2}$; e half-integral $\frac{1}{2}(1) \frac{35}{2}$; b, d, f integral $1(1)9$, (153 tables).

The present volume is essentially the Russian original with a translation of the preface (9 pages). The translation is not very smooth, but is quite adequate for the use of the tables. This tabulation suffers in comparison to earlier work (in particular, those mentioned above) in that it lacks both a discussion of the properties of the Racah coefficients as well as algebraic tables of the Racah coefficients (these are often more useful than numerical values in theoretical applications). It should be mentioned, too, that the Racah coefficients are square roots of rational numbers; consequently, tabulation as decimal fractions involves some loss of information (only the Ishidzu, et al. tabulation—of the recent work—is expressed in exact (nondecimal) form).

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48[D].—D. G. Martin, *Tables of* $(\sin^2 x)/x^2$ *to Six Decimal Places*, Report 4935, Atomic Energy Research Establishment, Harwell, England, 69 pp., 29 cm. Available from H. M. Stationery Office. Price 10s.

These unique tables were computed on an IBM 7030 system to expedite the calculation of the attenuation of a beam of long-wavelength neutrons passing through a solid containing a number of randomly oriented defects.

The format resembles that of the companion tables of $(\sin x)/x$, described in the preceding review. Values of $(\sin^2 x)/x^2$ are presented to 6D for $x = 0(0.001)25(0.01)100$, together with rounded first differences.