BOOK REVIEWS

Asymptotic approximations of integrals, by Roderick Wong. Computer Science and Scientific Computing, Academic Press, London, 1989, viii+543 pp., $69.95. ISBN 0-12-762535-6

The importance of asymptotic approximation in mathematics and in applied sciences, both from the practical and from the theoretical standpoint, is unquestionable. Thus the appearance of a modern treatment discussing the manipulative techniques of this subject and its theoretical basis must be welcomed by all, particularly by those interested in the many developments in applied mathematics, physics, and engineering.

The history of asymptotics, and in particular of the asymptotic expansions of integrals, is as old as mathematical analysis itself, one of the first examples being discussed by Euler (1754). Successive important contributions were made by Laplace (1820) and Stokes (1850). However, the use of asymptotics became systematic only after Poincaré's celebrated definition of asymptotic series (1886). This powerful mathematical tool gives an analytic meaning to the manipulation of a wide class of formal series and constitutes a rigorous basis for methods of asymptotic analysis. Among several other applications, this important definition provided impetus for the development of asymptotic techniques for the evaluation of special integrals which depend on small or large characteristic parameters. Since Poincaré's time these techniques have penetrated several branches of applied mathematics and have, in turn, been affected by developments of this field, acquiring more and more global features. Areas of application include: optic diffraction, crystallography, acoustical scattering, wave propagation in dispersive media, electrical circuit theory, magnetoconvection in