



# Asymptotic Approximations of Integrals: Computer Science and Scientific Computing

By R. Wong



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Asymptotic Approximations of Integrals deals with the methods used in the asymptotic approximation of integrals. Topics covered range from logarithmic singularities and the summability method to the distributional approach and the Mellin transform technique for multiple integrals. Uniform asymptotic expansions via a rational transformation are also discussed, along with double integrals with a curve of stationary points. For completeness, classical methods are examined as well.

Comprised of nine chapters, this volume begins with an introduction to the fundamental concepts of asymptotics, followed by a discussion on classical techniques used in the asymptotic evaluation of integrals, including Laplace's method, Mellin transform techniques, and the summability method. Subsequent chapters focus on the elementary theory of distributions; the distributional approach; uniform asymptotic expansions; and integrals which depend on auxiliary parameters in addition to the asymptotic variable. The book concludes by considering double integrals and higher-dimensional integrals.

This monograph is intended for graduate students and research workers in mathematics, physics, and engineering.

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### **Bibliography**

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### **Editorial Review**

#### **About the Author**

Roderick S. C. Wong is a Professor of Mathematics and Dean of the Faculty of Science and Engineering at the City University of Hong Kong. The author of over 80 published papers and four edited books, Professor Wong currently serves on the editorial board of seven journals. He is the recipient of several prestigious honors, awards, and grants and is an honorary professor at three universities.

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