

This book deals with the theory of computer arithmetic and it treats the implementation of arithmetic on digital computers. The aim is to improve the accuracy of numerical computing and to control the quality of the computed results (validity). It illustrates how advanced computer arithmetic can be used to compute highly accurate and mathematically verified results. The book can be used as a high-level undergraduate textbook but also as reference work for research in computer arithmetic and applied mathematics.

• **From the contents**

- Rounding Invariant Structures
- Definition of Computer Arithmetic
- Floating-Point Arithmetic
- Interval Arithmetic
- Implementation of Arithmetic on a Computer
- Hardware Support for Interval Arithmetic
- Scalar Products and Complete Arithmetic
- Principles of Verified Computing

Computer Arithmetic and Validity

Ulrich Kulisch

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Theory, Implementation, and Applications

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Studies in Mathematics

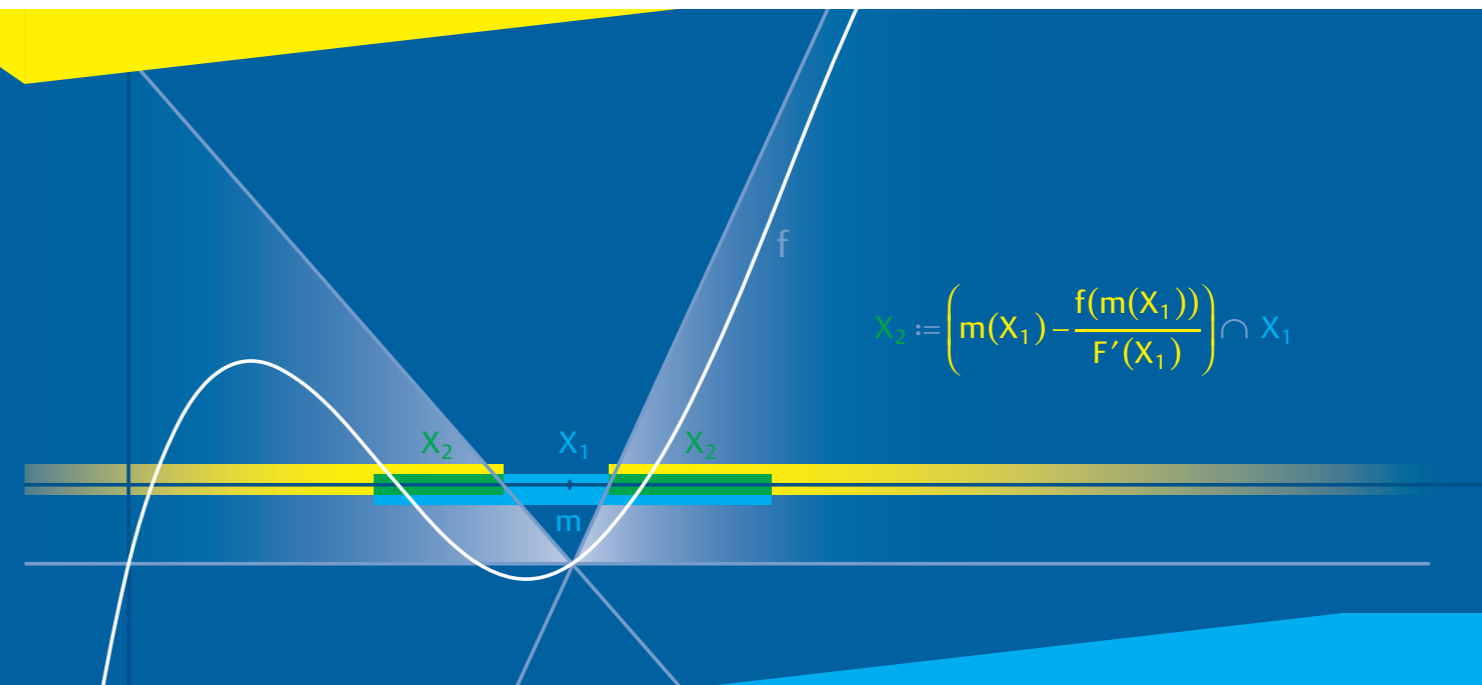
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**About the author**

Since 1966 Ulrich Kulisch has been Professor of Mathematics and Director of the Institute of Applied Mathematics at the Universität Karlsruhe. For many years he was also the director of its Computing Center. Ulrich Kulisch is the author or co-author of about 100 scientific publications and ten books. He spent several sabbaticals abroad at universities and research institutions in the USA and Japan. His scientific work led to cooperations with several computer companies.



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