Numerical computing with IEEE floating point arithmetic

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Abstrak

Are you familiar with the IEEE floating point arithmetic standard? Would you like to understand it better? This book gives a broad overview of numerical computing, in a historical context, with special focus on the IEEE standard for binary floating point arithmetic. Key ideas are developed step by step, taking the reader from floating point representation, correctly rounded arithmetic, and the IEEE philosophy on exceptions, to an understanding of the crucial concepts of conditioning and stability, explained in a simple yet rigorous context. It gives technical details that are not readily available elsewhere, and includes challenging exercises that go beyond the topics covered in the text.
Numerical Computing with IEEE Floating Point Arithmetic provides an easily accessible yet detailed discussion of IEEE Std 754-1985, arguably the most important standard in the computer industry. The result of an unprecedented cooperation between academic computer scientists and the cutting edge of industry, it is supported by virtually every modern computer. Other topics include the floating point architecture of the Intel microprocessors and a discussion of programming language support for the standard.