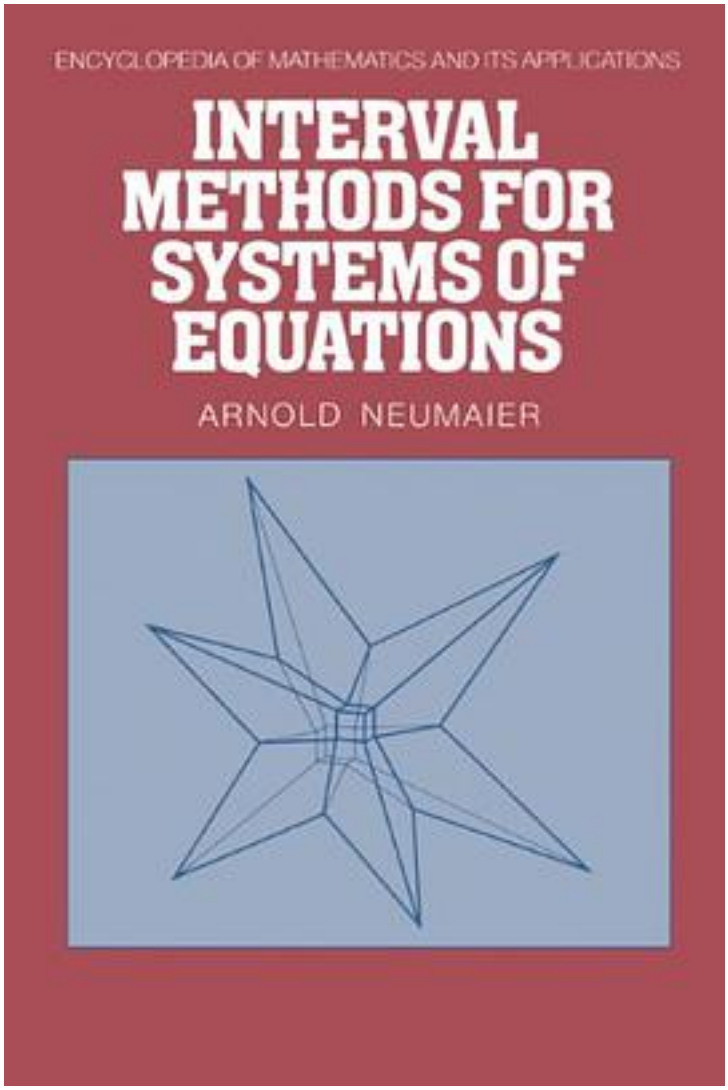
Interval Methods for Systems of Equations



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An interval is a natural way of specifying a number that is specified only within certain tolerances. Interval analysis consists of the tools and methods needed to solve linear and nonlinear systems of equations in the presence of data uncertainties. Applications include the sensitivity analysis of solutions of equations depending on parameters, the solution of global nonlinear problems, and the verification of results obtained by finite-precision arithmetic. In this book emphasis is laid on those aspects of the theory which are useful in actual computations. On the other hand, the theory is developed with full mathematical rigour. In order to keep the book self-contained, various results from linear algebra (Perron-Frobenius theory, M- and H- matrices) and analysis (existence of solutions to nonlinear systems) are proved, often from a novel and more general viewpoint. An extensive bibliography is included.

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