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## Error and Uncertainty Quantification in the Numerical Simulation of Complex Fluid Flows

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By Timothy J Barth

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The failure of numerical simulation to predict physical reality is often a direct consequence of the compounding effects of numerical error arising from finite-dimensional approximation and physical model uncertainty resulting from inexact knowledge and/or statistical representation. In this topical lecture, we briefly review systematic theories for quantifying numerical errors and restricted forms of model uncertainty occurring in simulations of fluid flow. A goal of this lecture is to elucidate both positive and negative aspects of applying these theories to practical fluid flow problems. Finite-element and finite-volume calculations of subsonic and hypersonic fluid flow are presented to contrast the differing roles of numerical error and model uncertainty. for these problems.



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