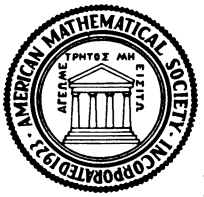

Large-Scale Computations in Fluid Mechanics

Bjorn E. Engquist, Stanley Osher and Richard C. J. Somerville, Editors

This is the proceedings of an AMS-SIAM Summer Seminar on Applied Mathematics held at Scripps Institution of Oceanography in 1983, whose purpose was to bring scientists interested in computational fluid mechanics together with numerical analysts and mathematicians working in large-scale computations. The complexity of many contemporary problems of fluid mechanics is so great as to tax the capabilities of present-day computers. There is a real need and opportunity for numerical analysis to aid research on the physical problems of achieving optimal utilization of current computers.

Fifty lectures were given on subjects equally divided between mathematics and applications. The numerical modeling included geophysical problems of the atmosphere, ocean, and interior of the earth, and planetary, solar, and stellar atmospheres. Applications ranged from idealized turbulence in laboratory convection models to operational weather prediction. Engineering applications included aerodynamics, combustion, and flow in porous media. Recent advances in numerical analysis which have applications to these problems were stressed. These include shock capturing algorithms, spectral methods, boundary treatments, vortex methods, and parallel computing.

In addition to specialized research lectures, several speakers gave talks surveying important areas of numerical analysis and computational fluid dynamics.

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