

Lecture Notes
in Computational Science
and Engineering

39

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Multiscale Modelling and Simulation

 Springer

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Preface

These Lecture Series in Computational Science and Engineering include the proceedings of a Summer Program in Multi-Scale Modelling and Simulation held in Lugano, Switzerland, between August 4th and 30th, 2003. The workshop was organized by the ETHZ Computational Laboratory (CoLab) together with the Swiss Center for Scientific Computing in Manno (CSCS) and the Universit della Svizzera Italiana (USI) in the context of the ETHZ initiative in Computational Science and Engineering.

Computational Science and Engineering entails interdisciplinary research, by a sustained interaction of a critical mass of researchers, tackling complex problems of scientific and engineering interest under the unifying concept of computation. Multi-scale modeling and Simulations is a fundamental research topic in CSE exemplifying its interdisciplinary aspects and its unique character as a scientific discipline.

A broad range of scientific and engineering problems involve multi-scale phenomena. The computational study of these problems demands an ever increasing development of novel computational tools and mathematical methods. This Summer Program provided the opportunity to scientists from different scientific fields, faced with multiscaling problems, to exchange ideas and to pursue research in an interdisciplinary fashion. The workshop strengthened existing collaborations and developed new contacts between the participants that we believe will help in defining new scientific frontiers.

The scientific interactions, the weekly lectures and the working sessions showed that scientific cross fertilization can lead to significant advances in the specialized fields as well as in the unifying computational methodologies. The proceedings of this workshop serve as an attestation of this spirit of interdisciplinarity that characterises research in multiscale modeling and simulation.

Zurich,
February 2004

Sabine Attinger
Petros Koumoutsakos

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