

Call For Papers

Special Issue of Concurrency and Computation: Practice and Experience, Wiley

on

High Performance Computing in Modelling and Simulation

The development of models through which computers can simulate the evolution of artificial and natural systems is fundamental for the advancement of Science. In the last decades, the increasing power of computers has allowed to considerably extend the application of computing methodologies in research and industry, but also to the quantitative study of complex phenomena. This has permitted a broad application of numerical methods for differential equation systems (e.g., FEM, FDM, etc.) on one hand, and the application of alternative computational paradigms, such as Cellular Automata, Genetic Algorithms, Neural networks, Swarm Intelligence, etc., on the other. These latter have demonstrated their effectiveness for modelling purposes when traditional simulation methodologies have proven to be impracticable.

This Special issue aims to provide a platform for a multidisciplinary community composed of scholars, researchers, developers, educators, practitioners and experts from world leading Universities, Institutions, Agencies and Companies in Computational Science, and thus in the High Performance Modelling and Simulation field. This Special Issue intent is to offer an opportunity to express and confront views on trends, challenges, and state-of-the art in diverse application fields, such as engineering, physics, chemistry, biology, geology, medicine, ecology, sociology, traffic control, economy, etc.

Guest editors

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Topics

Tentative authors are invited to submit original unpublished works on topics from a wide range of high performance computing methods, including but not limited to the following:

- High-performance computing in computational science: intra-disciplinary and multi-disciplinary research applications;
- High-performance modelling and simulation of complex systems;
- Applications to High-performance modelling and simulation of Cellular Automata, Evolutionary Computation, Artificial Neural Networks and Swarm Intelligence;
- Integrated approach to optimization and simulation supported by high-performance computing;
- Multi-core CPUs, as well as hybrid multicore-CPU and GPU applications in computational science;
- Parallel optimization algorithms and modelling techniques related to optimization in Computational Science;
- High-performance software developed to solve science (e.g., biological, physical, and social), engineering, medicine, and humanities problems;
- Hardware approaches of high performance modelling and simulation.

Important dates

- Submission: 15th June 2016
- First Notification: 15th September 2016
- Revision Submission: 15th October 2016
- Second Notification: 30th November 2016
- Final version Submission: 31th December 2016