

Special Session: Tools for Program Development and Analysis in Computational Science

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The use of supercomputing technology, parallel and distributed processing, and sophisticated algorithms is of major importance for computational scientists. Yet, the scientists' goals are to solve their challenging scientific problems, not the software engineering tasks associated with it. For this reason, computational science and engineering must be able to rely on dedicated support from program development and analysis tools.

The primary intention of this workshop is to bring together developers of tools for scientific computing and their potential users. Since its beginning at the first ICCS in 2001, the workshop has encouraged tool developers and users from the scientific and engineering community to exchange their experiences. Tool developers present to users how their tools support scientists and engineers during program development and analysis. Tool users report their experiences employing such tools, especially highlighting the benefits and the improvements possible by doing so.

The workshop covers various research topics, including

- Problem solving environments for specific application domains
- Application building and software construction tools
- Domain-specific analysis tools
- Program visualization and visual programming tools
- On-line monitoring and computational steering tools
- Requirements for (new) tools emerging from the application domain
- Tools for parallel, distributed and network-based computing
- Testing and debugging tools
- Performance analysis and tuning tools
- (Dynamic) Instrumentation and monitoring tools
- Data (re-)partitioning and load-balancing tools

- Checkpointing and restart tools
- Tools for resource management, job queuing and accounting

This year a rich number of papers has been submitted to the workshop. From the 25 submissions, nine papers have been selected for a presentation in the conference. These papers give a basic overview and some technical details of the authors' recent research work in the area of software tools, with a focus on optimal libraries, on-line monitoring and steering, performance and pattern analysis systems, automatic code optimization, and systems for supporting application development on the Grid.

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