Topic 4
Compilers for High Performance

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Topic Chairs

This topic deals with a range of subjects concerning the compilation of programs for high performance architectures, from general-purpose machines to specific hardware designs. It includes language aspects, program analysis and transformation to optimize resource utilization or to support parallelization. Most papers study the interactions between the programming language, the compiler framework, the hardware, operating system or runtime environment.

Out of the 6 papers submitted to this topic, 2 were accepted for presentation at the conference (as regular papers). We provide a short outline of the topics addressed in these contributions.

Feedback-directed and adaptive compilation, as well as domain-specific program generation and optimization are the hot research areas for topic 4 this year.

The paper *Deciding Where to Call Performance Libraries* by Christophe Alias and Denis Barthou propose a framework to recognize library function templates from the high-level semantical analysis of scientific codes. This ambitious work demonstrates the effectiveness of the approach, replacing hot program parts in standard benchmarks by highly tuned implementations in parallel or sequential libraries.

The paper *The Periodic-Linear Model of Program Behavior Capture* by Philippe Clauss, Bénedicte Kenmei and Jean-Christophe Beyler introduces a formal model and algorithms to analyze and predict the runtime phase behavior of programs; this model can be used for adaptive and dynamic optimization.

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