HIPS'04 held in conjunction with the 18th International Parallel and Distributed Processing Symposium (IPDPS 2004) in Santa Fe, New Mexico, USA, was the ninth in a series of workshops on High-Level Parallel Programming Models and Supportive Environments. It provided a forum for researchers working in the areas of applications, computational models, language design, compilers, system architecture, and programming tools to discuss new developments in programming component-based parallel systems.

One of the keys for the advancement of parallel processing is the existence of high-level programming models and abstractions that allow one to more easily produce truly efficient applications across a range of parallel architectures. The adoption of a component programming model offers the promise of increased programmer specialization through a clear separation of the boundaries between program elements. This clear separation enhances the opportunity for software reuse as well as enhancing the opportunity for unit testing. However, current implementations of component-based systems for high-performance computing often suffer from restricted applicability (limiting reuse), from the lack of corresponding high-level development tools (e.g., performance analysis and debugging), and from poor performance. This situation requires strong research efforts in the design of parallel programming models and languages supporting component-based systems that are both at a high conceptual level and implemented efficiently, in the development of supportive tools, and in the integration of languages and tools into convenient programming environments.

We selected thirteen high-quality papers for presentation at the one-day workshop and for publication in these proceedings.

- Session 1 and Session 2 covered the design and implementation of high-level programming models for parallel environments.
- Session 3 was devoted to component frameworks supporting the composition and running of component-based applications.
- In Session 4, techniques for programming component-based applications and an infrastructure for problem solving environments was presented.

In summary, the solid collection of papers made for an interesting and stimulating workshop and once again, provided evidence that high-level parallel programming is still a widely open and active research topic. Thus, this series of workshops will certainly be continued in the years to come.

We thank all of the researchers for their contributions to the workshop and the Program Committee members and reviewers for their time and expertise, which helped to make HIPS'04 become reality and a successful event. We would like to thank the organizers of the 18th International Parallel and Distributed Processing Symposium for inviting us to organize the workshop and for taking care of the local arrangements. We would also like to thank the United States Department of Energy for supporting the workshop within the framework of the Scientific Discovery through Advanced Computing initiative (SciDAC).

Craig Rasmussen, Workshop Chair
Los Alamos National Laboratory (USA)