

JSC Guest Student Programme on Scientific Computing 2012

As one of the leading HPC centres in Europe, Jülich Supercomputing Centre provides supercomputer resources, IT tools and HPC expertise for computational scientists at German and European universities, research institutions, and in industry. An important part of this mission is to introduce young academics to HPC and its role in scientific research. To this end, JSC hosts regular support activities and educational programmes in the field of Scientific Computing.

The JSC Guest Student Programme on Scientific Computing has already been successfully running for 13 years. Since the first programme in 2000, a total of 133 students have had the

opportunity to join research teams from JSC and other institutes at Forschungszentrum Jülich for ten weeks. Working on challenging topical scientific projects, they received training with up-to-date hardware and software as well as HPC-related methods and algorithms. For many students, the programme has been the foundation for a career in HPC and the basis for fruitful continuing cooperations with their advisers, occasionally leading to widely recognized scientific publications, e.g. [1] to give a recent example. Some students also returned to JSC as Master or PhD candidates.

The JSC Guest Student Programme 2012 took place from August 6 -

October 12. Once again it was run under the CECAM framework (Centre Européen de Calcul Atomique et Moléculaire) and organized in cooperation with the German Research School for Simulation Sciences (GRS). Support by IBM Germany through a sponsorship within the IBM University Relations programme is also gratefully acknowledged.

This year's announcement yielded a record response of more than 30 applications from 13 countries, comprising applicants from a particularly wide range of disciplines, including: mathematics, physics, chemistry, computer science and engineering, biomedicine and earth sciences. This meant that competition for the available places was especially strong, and after the final selection process, 13 students were invited to Jülich.

The programme started with ten days of introductory courses on parallel programming, including use of MPI on distributed-memory cluster systems and OpenMP for shared-memory parallelization, as well as CUDA and OpenCL for GPU-accelerated machines. For the remainder of their stay, the participants worked on research projects in a broad area of fields, ranging from applications in atmospheric sciences, fluid and molecular dynamics, particle-in-cell methods, and safety research, to fundamental research in elementary particle physics and mathematical algorithms. Besides using the multi-purpose cluster JUROPA and the GPU system JUDGE, one of the key topics

was the utilization of the newly installed IBM Blue Gene/Q system JUQUEEN in Jülich.

During a concluding colloquium, the participants had the opportunity to present and discuss their work with other students and supervisors. Finally, more detailed reports have been prepared and were compiled into a printed JSC publication, which will be made available online.

Next year's JSC Guest Student Programme will start on August 5, 2013. It will be officially announced in January 2013 and is open to students from the natural sciences, engineering, computer science and mathematics after completing their Bachelor and before reaching their Master's degree. The application deadline has been fixed to April 26, 2013. Additional information as well as the reports of previous years can be found online on www.fz-juelich.de/jsc/gsp

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References

- [1] Dapp, W., Lücke, A., Persson, B., Müser, H. Self-Affine Elastic Contacts: Percolation and Leakage, Phys. Rev. Lett. 108, p. 244301, 2012

