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JSC and Partners to Build JURECA Booster Module

JSC, Intel, ParTec and Dell have partnered up to develop and deploy a "Booster" component for the JURECA system. Following the successful pioneering work in the EU-funded DEEP and DEEP-ER projects (see current press release at *http://deep-er.eu/finalpressrelease*), the combined Cluster-Booster JURECA system will enable users to dynamically distribute their applications between multi- and many-core modules to optimally leverage their respective advantages for the execution of sub-portions of their application. The Booster will be built from Intel Xeon Phi 7250-F (Knights Landing) processors with on-package Intel Omni-Path Architecture interfaces. It was co-designed by Intel and JSC to enable maximum scalability for large-scale simulations and will have a peak performance of 5 PFLOP/s. The system will be supplied by Intel with its subcontractor Dell.

The JURECA Booster will be directly connected to the JURECA cluster, a system delivered by T-Platforms in 2015. As part of the project, a novel high-speed bridging mechanism between JURECA's InfiniBand EDR and the Booster's Intel Omni-Path Architecture interconnect will be developed by the group of partners. The Cluster and Booster modules will be operated as a single system although users will continue to be able to choose to execute on a subset of the modular system as required for their research.

The system installation is planned for late autumn 2017. The computing time on the system will be made available to members of Forschungszentrum Jülich and RWTH Aachen University through JARA-HPC/VSR calls. Moreover, during a two-year interim period scientists at German universities and research institutions can request computing time via the John von Neumann Institute of Compute (NIC) calls. (Contact: Dr. Dorian Krause, *d.krause@fz-juelich.de*)

JSC@ISC'17

The International Supercomputing Conference 2017 (ISC'17) will take place from 18 to 22 June 2017 in Frankfurt am Main. JSC, together with its partners in the Gauss Centre for Supercomputing (GCS) – HLRS (Stuttgart), and LRZ (Garching) – will present its wide-ranging supercomputing activities at the GCS booth (#1310). At this year's ISC, GCS will celebrate its 10th anniversary with a Happy Hour at its booth on Tuesday, June 20, 16:00 - 18:00. All partners and friends are invited to join in.

JSC and its partner NVIDIA will demonstrate an easy-to-use workflow from simulation data to virtual reality (VR) helping scientists to visualize their results in VR. JSC will present this powerful solution combining the visualization software ParaView and the VR system HTC Vive in a live demo. Furthermore, JSC will showcase LLview, the comprehensive interactive monitoring software for supercomputers developed in-house. A wide spectrum of scientific results

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obtained with Jülich supercomputers will be exhibited in the form of videos and animations. Flyers will present information about JSC's research and support activities as well as the HPC infrastructure provided for national and international scientists.

JSC staff will co-organize the workshops "Experiences on Intel Knights Landing at the one-year mark" and the "Second International Workshop on OpenPOWER for HPC (IWOPH'17)". Furthermore, members of JSC will speak in the Birds-of-a-Feather sessions "POP Improves HPC Applications" and "Towards Addressing Exascale I/O Requirements & Challenges".

Additionally, they will give several presentations at the conference and will co-organize the tutorial "Hands-on Practical Hybrid Parallel Application Performance Engineering". Members of JSC will also be on hand at the booths of PRACE (#1201), JARA (#1320) and UNICORE (#535). Detailed information on JSC's participation can be found at *http://www.fz-juelich.de/ias/jsc/isc17*.

(Contact: Dr. Florian Janetzko, *f.janetzko@fz-juelich.de*)

News from the NIC Scientific Council

The Scientific Council of the John von Neumann Institute for Computing (NIC) held its annual meeting on 20 April 2017 at the GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt. The meeting was moderated by the chair of the council, Prof. Kurt Binder (University of Mainz). After six years of dedicated commitment, his term will end on 31 December 2017. Vice chairman Prof. Marcus Müller (University of Göttingen) was unanimously elected as chairman and will take office at the beginning of next year. Prof. Binder will still remain on the council as vice chairman. Furthermore, Prof. Stefan Kollet (FZJ), Dr. Thomas Kollegger (GSI), Prof. Thomas Jung (Alfred Wegener Institute) and Prof. Zoltan Fodor (University of Wuppertal) were elected as new members and will begin their terms in January 2018. Prof. Simon Trebst (University of Cologne) and Dr. Gustav Bihlmayer (FZJ) were elected as new members of the NIC Peer Review Board. Dr. Bihlmayer took office in April, and Prof. Trebst will begin his term of office at the upcoming meeting of the NIC Peer Review Board in October.

(Contact: Dr. Alexander Trautmann, *coordination-office@fz-juelich.de*)

NIC Excellence Project May 2017

The NIC Peer Review Board regularly awards the title "NIC Excellence Project" to outstanding simulation projects. At its April meeting, the board decided to honour Prof. Peter Nielaba (University of Konstanz) for his project "Numerical Investigations of Structures and Phases in (Nano-) Systems in Confined Geometry". The project, which has been granted computing time on JURECA, deals with the thermal conductance of nanostructures and colloidal systems. Results of the project were recently published in *Science*. This publication reveals that thermal conductance in such systems can be quantized even at room temperature and, furthermore, it explains the fundamental relation between thermal and electrical conductance, see *http://dx.doi.org/10.1126/science.aam6622*.

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New GCS Large-Scale Projects in May

Twice a year, the Gauss Centre for Supercomputing (GCS) issues a call for large-scale projects on its petascale supercomputers – currently Hazel Hen (HLRS), JUQUEEN (JSC) and SuperMUC (LRZ). Projects are classified as large-scale if they require at least 35 million compute core hours (Mcore-h). During its April meeting at the GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt, the GCS Peer Review Board decided to award the status of a large-scale project to 32 projects from various scientific fields. Seven projects were granted 796 Mcore-h on Hazel Hen, 16 projects were granted 805 Mcore-h on JUQUEEN, and nine projects were granted 547 Mcore-h on SuperMUC. In total, the GCS awarded more than 2.1 billion compute core hours to large-scale projects. For more details of these projects, some of which utilize the resources of several centres, visit *http://www.gauss-centre.eu/large-scale*.

(Contact: Dr. Alexander Trautmann, *coordination-office@fz-juelich.de*)

Events

High-performance scientific computing in C++
Instructor: Dr. Sandipan Mohanty, JSC
Date: 20-21 June 2017, 09:00-16:30
Venue: Jülich Supercomputing Centre, Ausbildungsraum 2
Registration: *s.mohanty@fz-juelich.de*

Summer School on Fire Dynamics Modeling 2017
Date: 7-11 August 2017, 09:00-16:30
Venue: Jülich Supercomputing Centre
Registration: *firesim@fz-juelich.de*

Introduction to parallel programming with MPI and OpenMP
Instructor: Benedikt Steinbusch, JSC
Date: 15-18 August 2017, 09:00-16:30
Venue: Jülich Supercomputing Centre, Ausbildungsraum 1
Registration: *b.steinbusch@fz-juelich.de*

If you would like to receive regular information on our events, please send an email to *jsc-events-join@fz-juelich.de*.

Further events, talks, and training courses:
http://www.fz-juelich.de/ias/jsc/events

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