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Primeur weekly
2018-02-19

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Michael Levine

MACH-2 put into operation at 77 trillion operations/second

19 Feb 2018 Linz
- *With enormous computing power, the new supercomputer of the Johannes Kepler University has been introduced. Under certain conditions, the MACH-2 supercomputer can execute up to 77.4 trillion arithmetic operations per second.*



On February 19, 2018, the Johannes Kepler University officially put the device into operation together with its research partners. Scientists at Kepler University have been able to carry out highly complex simulations with the MACH since 2011. Even this high-performance device was no longer able to meet the requirements of research at some point. With the new device, the Johannes Kepler University now receives a supercomputer of the type "SGI UV 3000" from the company Hewlett Packard Enterprise (HPE). The computing power is thereby approximately tripled.

The acquisition of the MACH-2 costs around 1.6 million euro, and funding is provided by the higher education funding for the research area of the Federal Ministry of Education, Science and Research (BMBWF). Maintenance and operation are correspondingly expensive. Other research institutions are therefore also involved in the project: the supercomputer is also available to scientists from the Universities of Salzburg and Innsbruck, the Johann Radon Institute (RICAM) and the Vienna University of Technology.

"For a single university, such an acquisition and operation is hardly to lift", told Johannes Kepler University Rector Meinhard Lukas about the broad cooperation. "With the commissioning of the MACH-2, we are also one step closer to our stated goal: the European top." Natural science topics, especially in the wake of the rapidly advancing digitization, would need in addition to the Kepler University's own research and inventiveness especially appropriate computing power. "Thanks to the comprehensive support of the federal government and together with our partners, we continue to make a major contribution to the sustainable development of cutting-edge research", explained Meinhard Lukas.

"Only a few scientific disciplines nowadays can do without a high-performance computing infrastructure. This ranges from the University of Innsbruck, for example, from 3D model calculations in archeology to the transcription of historical texts to climate and weather models or innovations in the technical sciences and computer science", stated Ulrike Tanzer, Research Vice Rector of the University of Innsbruck. "Particularly in Austria, it seems obvious that universities are cooperating on expensive research infrastructures such as high-performance computing. With the University of Linz, we have found a reliable partner."

Ministerial Council Univ.-Prof. Dr. Günther Burkert from the BMBWF spoke of "the start of a new era of supercomputing and thus of an innovative contribution to top Austrian and European research". In computer science, mathematics, mechatronics, biology, economics, pharmacy and many other areas, technological innovations would be possible and new insights would be gained, Univ.-Prof. Dr. Burkert said. "Consequently, the MACH-2 is thus a guarantor for the interdisciplinary and interdisciplinary transfer of knowledge as well as a key to new cooperation in Austria and in Europe."

There are already numerous projects for which the MACH-2 is



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MACH-2 put into operation at 77 trillion operations/second ...

Applications

CENIC recognizes technology projects to combat California wildfires ...

3D-e-Chem team develops building blocks and recipes for computer-aided drug discovery ...

Researchers find blood pressure drug holds promise for preventing onset of Type 1 diabetes ...

NCSA allocates over \$2.4 million in new Blue Waters supercomputer awards to Illinois researchers ...

NCSA researchers create one of the most reliable tools for long-term crop prediction in the U.S. Corn Belt ...

Embracing complexity in biological systems ...

Particle interactions calculated on Titan support the search for new physics discoveries ...

GM revs up diesel combustion modeling on Titan supercomputer ...

NEC and Tohoku University succeed in AI-based new material development ...

Physics data processing at

indispensable. The Institute of Organic Chemistry of the Johannes Kepler University carries out calculations to predict the interaction of biological agents - an important topic in the development of new drugs. Further application examples include Deep Learning for Life Sciences at the Institute of Bioinformatics, or - apart from the natural sciences - Calculations on Credit Risk Management at the Institute of Financial Mathematics, as well as economic analyses on the individual supplier and demand behaviour in e-commerce.

Source: Johannes Kepler University Linz

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