

Field of HPC possible to study at a unique doctoral school

Ostrava, 23rd March 2020 – MathInHPC Doctoral School offers students a wide portfolio of study and research related activities of Czech universities as well as the Czech Academy of Sciences, an opportunity to participate in internships at universities and research institutions, and access to the state-of-the-art HPC (High Performance Computing) technologies operated by IT4Innovations National Supercomputing Center.

In September 2019 the MathInHPC Doctoral School was established; it integrates doctoral study programmes and workplaces focused on development of mathematical methods and software tools for HPC and their application in computationally intensive research areas. The Doctoral School merges the doctoral studies offered by the Faculty of Mathematics and Physics at Charles University (FMP CU), the Institute of Mathematics of the Czech Academy of Sciences (IM CAS), the Faculty of Electrical Engineering and Computer Science at VSB – Technical University Ostrava (FEECS VSB-TUO), and IT4Innovations National Supercomputing Center (IT4I VSB-TUO). It was VSB – Technical University of Ostrava and its institute IT4Innovations who not only brought forth the idea to enable interested candidates to study the latest trends in the field of HPC, but also made significant efforts to establish the Doctoral School. There are currently 55 students engaged in the doctoral study programmes integrated within the Doctoral School.

“I consider a major benefit of the Doctoral School is the shared portfolio of offered study subjects, which means in practice that, for example, a student of VSB-TUO can supplement his or her individual study plan with subjects offered by Charles University and vice versa. Within each study programme, we are primarily focused on developing efficient mathematical methods, parallel libraries, and software tools for solving computationally intensive problems from the natural sciences and technical fields. HPC as a scientific field has not yet been sufficiently incorporated into university study programmes despite the fact that HPC experts are highly sought after with respect to increasingly rapid HPC technology advancements and their increasingly frequent use by enterprises in optimization of their products, digitalization of production processes, processing of large datasets, and the design of new materials, drugs and medical procedures, among others. Due to the participation of IT4Innovations National Supercomputing Center, students may apply and check their knowledge in practice using access to the state-of-the-art HPC technologies operated by the centre, and consult with HPC experts about their work with HPC, which is also an invaluable benefit of the Doctoral School,” says Tomáš Kozubek from IT4Innovations National Supercomputing Center, the Chair of the Doctoral School Board and IT4Innovations Scientific Director.

Within the Doctoral School, students may currently choose to study in the following PhD study programmes:

- Mathematical and computer modelling (Physics study programme, FMP CU + IM CAS),
- Scientific and technical computing (Mathematics study programme, FMP CU + IM CAS),

- Computational sciences (Computational sciences study programme, FE ECS VSB-TUO + IT4I VSB-TUO),
- Computational and applied mathematics (Computational and applied mathematics study programme, FE ECS VSB-TUO).

It is expected that in the future other workplaces as well as PhD study programmes focused on development and application of methods and software tools in HPC will be established in the Czech Republic. More information will soon be published on the website of the Doctoral School (www.mathinhpc.cz). The Doctoral School's activities, however, are not limited to the study programmes incorporating the shared portfolio of study subjects. *“Our objective is, among others, to organise seasonal schools, thematic workshops, internships abroad, and offer dissertation topics jointly supervised by experts across the Doctoral School. Students will also have an opportunity to regularly present and discuss their achievements within a whole range of workshops and conferences organised by the partners of the Doctoral School. One of the examples worth mentioning is the HPC in Science and Engineering conference held every two years in the Beskid mountains, with its high participation of invited HPC experts from the Czech Republic and abroad,”* says René Kalus, the manager of the MathInHPC project, in the frame of which the Doctoral School has been established.



The Doctoral School has been established within the OP RDE project entitled The Doctoral School for Education in Mathematical Methods and Tools in HPC (CZ.02.2.69/0.0/0.0/16_018/0002713).

Media contact

Zuzana Cervenkova, Spokesperson for IT4Innovations National Supercomputing Center

zuzana.cervenkova@vsb.cz

Phone: +420 602 593 335

IT4Innovations National Supercomputing Center at VSB – Technical University of Ostrava represents a strategic large research infrastructure, and together with two other infrastructures, CESNET and CERIT-SC, constitutes the E-infrastructure of the Czech Republic.

IT4Innovations provides state-of-the-art supercomputing technology and services to both Czech and foreign research teams from academia and industry and conducts excellent research in the field of High Performance Computing (HPC), High Performance Data Analysis (HDP A), and Artificial Intelligence (AI). Core IT4Innovations research topics include advanced data processing and analysis, machine learning, the development of parallel scalable algorithms, the solution of demanding engineering tasks, and modelling for nanotechnology.

Currently, IT4Innovations runs four supercomputers – Anselm, Salomon, Barbora, and a special system for AI calculation: NVIDIA DGX-2. The petascale system EURO_IT4I will be installed at IT4Innovations as a part of the EuroHPC JU project in 2020.

For more visit www.it4i.cz