

HIGH PERFORMANCE COMPUTING IN RESEARCH AND INDUSTRY

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ABSTRACT

High-performance computing (HPC) is today a key enabling technology for scientific research and industrial development in a range of fields. It is, for example, applied in virtual wind tunnels, in drug discovery, for climate modelling, or in material science. Frequently, the computational models are based on differential equations, particle systems, or deep neural networks, or combinations thereof. They are used to perform experiments in a simulated environment that is becoming ever more realistic as computational power and access to data grows. The increase of computational power relies on the one hand on the integration of novel and efficient computing hardware into current HPC systems, and on the other hand on the development of algorithms and programming environments suited for massively parallel, scalable, and efficient execution. In this session, we invite contributions in the field of HPC with a focus on applied computational modelling and simulation, from the development of new numerical methods, algorithms, and software, to the application of the technology in large-scale simulations in research and industry. In this context, contributions which clearly show the groundbreaking potential of HPC-based modelling in technology fields, showcasing how decisive it can become in value chains, are sought.