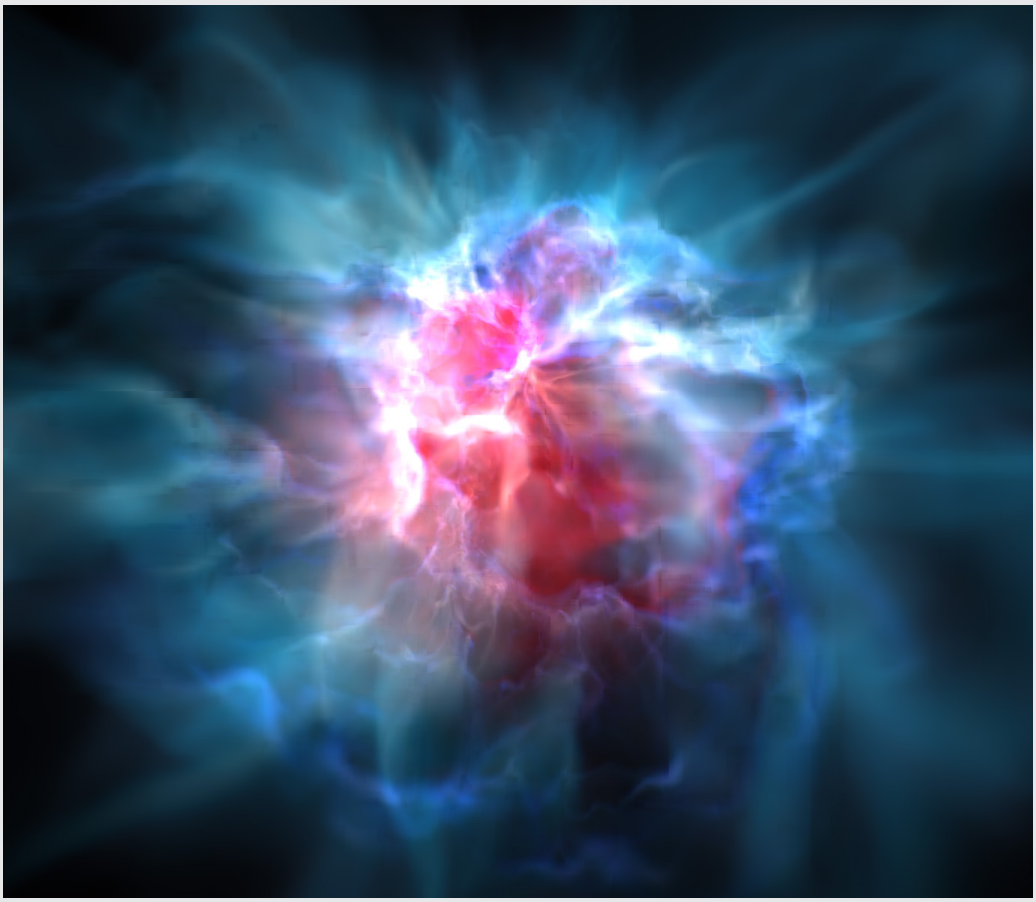
John von Neumann Institute for Computing

NIC Symposium 2025

6 – 7 March 2025 I Jülich, Germany

Ch. Peter, M. Müller, A. Trautmann (Editors)

Proceedings



NIC Series

Forschungszentrum Jülich GmbH
John von Neumann Institute for Computing (NIC)

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Contents

Astrophysics

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Elementary Particle Physics

Materials Science

Condensed Matter Theory

Computational Soft Matter Science

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Fluid Mechanics

Plasma Physics and Charged Particle Dynamics

The John von Neumann Institute for Computing (NIC) is a joint foundation of the three Helmholtz Centres Forschungszentrum Jülich, Deutsches Elektronensynchrotron DESY, and GSI Helmholtzzentrum für Schwerionenforschung as well as the Goethe University Frankfurt. It is a long term supporter of computational science in Germany and Europe.

The core task of the NIC is the peer-reviewed allocation of supercomputing resources to computational science projects in Germany and Europe. The NIC partners also support supercomputer-aided research in science and engineering through a three-way strategy:

- Provision of supercomputing resources for projects in science, artificial intelligence, research, and industry.
- Supercomputer-oriented research and development by research groups in selected fields of physics and natural sciences.
- Education and training in all areas of supercomputing by symposia, workshops, summer schools, seminars, courses, and guest programmes for scientists and students.

The NIC Symposium is held biennially to give an overview on activities and results obtained by the NIC projects in the last two years. The contributions for this 12th NIC Symposium are from projects that have been supported by the supercomputer JUWELS in Jülich. They cover selected topics in the fields of Astrophysics, Biophysics, Chemistry, Elementary Particle Physics, Materials Science, Theoretical Condensed Matter, Soft Matter Science, Earth and Environment, Computer Science and Numerical Mathematics, Fluid Mechanics and Engineering, Plasma Physics and Charged Particle Dynamics.

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