



How to find us:

Arrival by air: Upon arrival at Cologne Bonn Airport (Köln Bonn Flughafen) take a taxi in front of the terminal and ask the driver to take you to 'DLR in Porz-Wahnheide'.

Arrival by train: The local trains ('S-Bahn') S 12 or S 13 leave from Cologne mainstation (Köln Hauptbahnhof) and Siegburg. Get off at the railway station 'Porz-Wahn' and continue from there by KVB bus number 162, direction 'DLR'.

Arrival by car: Have a look at the map above: Arriving from Frankfurt (A3) or from Bonn (A59): follow the indications to Cologne Bonn Airport (A59) until the exit Porz-Wahn/Wahnheide. At the exit take the right (Porz-Wahnheide) and follow the DLR sign. If you use a navigation system, enter your destination as 'Planitzweg' instead of Linder Hoehe.

DLR at a glance

The German Aerospace Center (DLR) is the national aeronautics and space research centre of the Federal Republic of Germany. Its extensive research and development work in aeronautics, space, energy, transport, security and digitalisation is integrated into national and international cooperative ventures. In addition to its own research, as the German space agency, DLR has been given responsibility by the federal government for the planning and implementation of the German space programme. DLR is also the umbrella organisation for one of the nation's largest project management agencies.

DLR has approximately 8000 employees at 20 locations in Germany: Cologne (headquarters), Augsburg, Berlin, Bonn, Braunschweig, Bremen, Bremerhaven, Dresden, Goettingen, Hamburg, Jena, Juelich, Lampoldshausen, Neustrelitz, Oberpfaffenhofen, Oldenburg, Stade, Stuttgart, Trauen, and Weilheim. DLR also has offices in Brussels, Paris, Tokyo and Washington D.C.

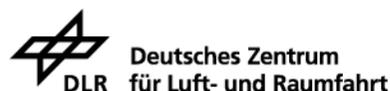
Imprint

Publisher:
Deutsches Zentrum für Luft- und Raumfahrt e. V.
German Aerospace Center (DLR)
Institute of Materials Research

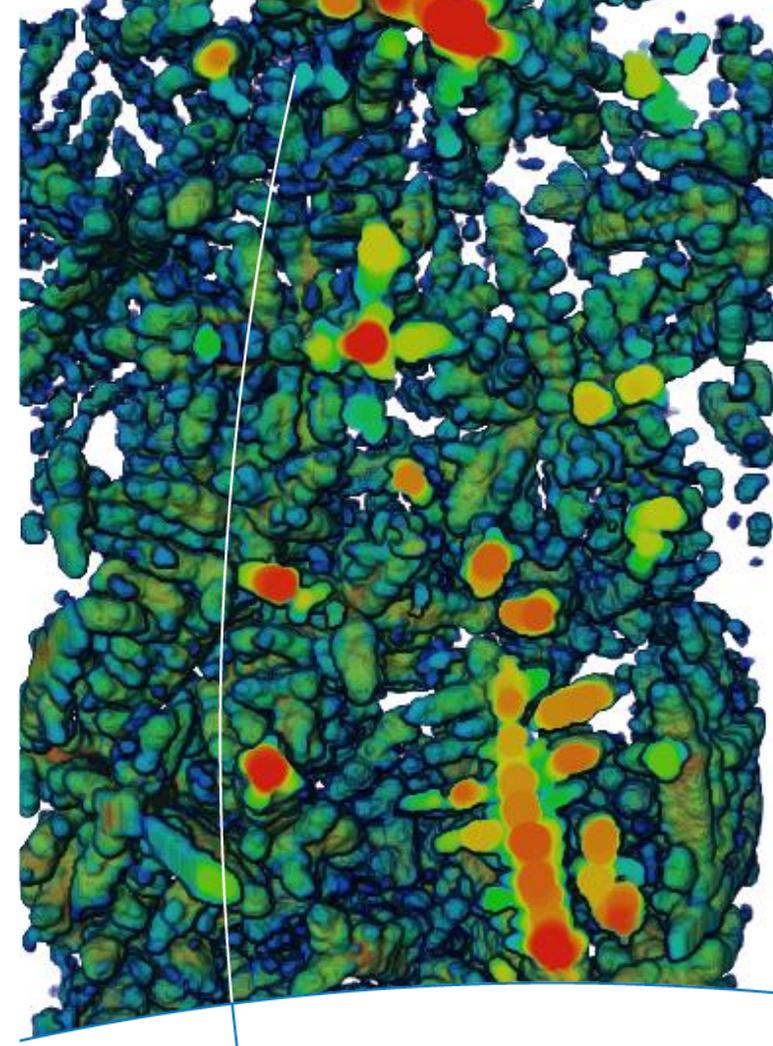
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Gefördert durch:



Materials Colloquium 2019

Quantum machine learning meets ab-initio simulation – A revolution in materials research?

3 December 2019



The Institute of Materials Research of the German Aerospace Center invites you to the annual Materials Colloquium on Tuesday, 03 December 2019, on the DLR campus in Cologne.

Machine learning meets ab-initio simulation – A revolution in materials research?

Big data, artificial intelligence, machine learning – we are used to talk about these technologies in the context of Factory of the Future and Industry 4.0. Since a quite short period of time, however, they sneak into the theater of materials research, mingle with digital tools like ab-initio simulation, micro-scale materials simulation and high-throughput analysis to something which is now called materials informatics. And recently, but hesitantly, quantum computing jumps in, threatening or rather promising to turn the way how to do materials research upside-down. This new arena of digital technologies creates thrilling opportunities but also distressing questions and uncertainties.

In the frame of our annual materials colloquium and together with renown experts we will light up the scene and work out scenarios of quantum machine learning based materials engineering. We look forward to a program of pace-making presentations and exciting discussions about the future of a digitalized materials research.

Prof. Dr. Heinz Voggenreiter

Agenda

9:30 Greeting words and introduction

Prof. Dr. Heinz Voggenreiter, Head of DLR-Institute of Materials Research, Cologne, and DLR-Institute of Structures and Design, Stuttgart/ Augsburg

9:45 Key-Presentation: Using quantum computers to simulate materials

Dr. Michael Marthaler, Karlsruhe Institute of Technology

10:20 From the Schrödinger equation to materials design

Prof. Dr. Ralf Drautz, ICAMS, Ruhr University Bochum

10:45 Microstructure simulation: A bridge between atom to bulk material

Dr. Rizviul Kabir, DLR, Cologne

11:10 Coffee break

11:30 Molecular to continuum modelling of soft matter: A path towards realizing a digital twin

Dr. Ameya Rege, DLR, Cologne

11:55 Challenges and Promise of Data Mining and Machine Learning in Materials Science

Prof. Dr. Sandfeld, TU Bergakademie Freiberg

12:20 Automatic segmentation of 3D and 4D synchrotron tomography using trained neural networks

Prof. Dr. Guillermo Requena, DLR, Cologne

12:45 Lunch break

13:45 High throughput scanning metrology for thermoelectric transport properties: A prerequisite for combinatorial materials research

Pawel Ziolkowski, DLR, Cologne

14:10 Automatic Data-Management in experimental settings

Florian Krebs, DLR, Augsburg

14:35 Panel discussion : The future of materials research in times of digitalization

Prof. Dr. Heinz Voggenreiter, DLR, Cologne

15:00 Closing remarks

When?

Tuesday, 3 December 2019, 09:30 – 15:00

Where?

German Aerospace Center (DLR)
Linder Hoehe
:envihab, Building 10
51147 Cologne
Germany

Registration

Please register by 25 November 2019 at <http://s.dlr.de/n9m2>. Participation is for free. The number of participants is limited.

Contact

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Information

We kindly inform you that a photographer will be present at this event. A selection of photos may be used on the institute homepage, in social networks or in print. If you don't want to be photographed, please contact the photographer on that day. Thank you very much!