

SE²A Newsletter 04/2020

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Dear members and friends of the cluster SE²A,

we hope you and your families are doing fine in this challenging times. The corona pandemic has significantly changed our daily life and our way of working. Nevertheless, it seems that research is fortunately one of the areas less affected by the corona impact. Thus our research work continues at full speed and virtual communication has taken over in many occasions as effective tool to stay in contact. To keep you informed about news in the cluster outside of your daily communication, please pay attention to our second newsletter, which also summarizes our major activities in the first quarter of 2020.

We are looking forward to meeting you again at one of SE²A's upcoming events in the autumn 2020!

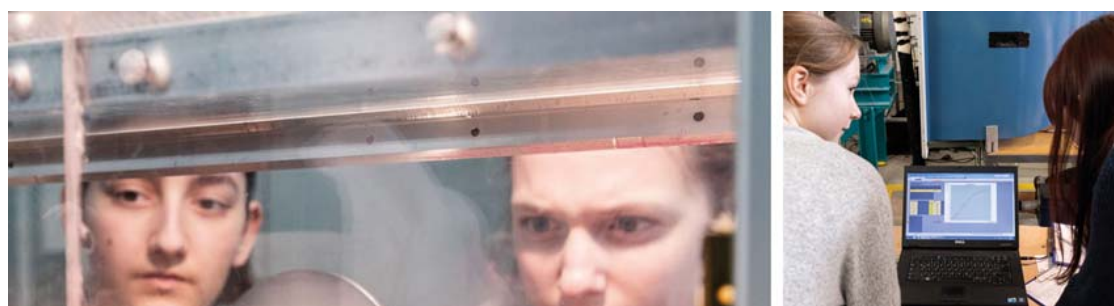
With best regards,

Prof. Dr.-Ing. Jens Friedrichs
(Spokesperson SE²A)

Dr. Doris Pester
(SE²A-Managing-Director)

The SE²A-newsletter will be published quarterly. For further information please visit our website: www.tu-braunschweig.de/se2a

// LATEST NEWS





March 27, 2020

Pupils experience aviation research at first hand **Research club "changING" visiting the Institute of Fluid Mechanics**

The guided tour of the Institute of Fluid Mechanics is one item on the agenda of the research club for pupils in the Cluster of Excellence SE²A. First, impressive wind tunnels and experimental setups were explained to the participants. Next, the pupils had to become active themselves and apply in an experiment what they had learned in an introductory lecture two weeks before. With excitement the pupils look forward to their further events at the Braunschweig research airport, at DLR, at the Protohaus and further actions.

The new research club "changING" of the Cluster of Excellence SE²A started in October 2019. 30 pupils from the 10th grade onwards have the opportunity to experiment on their own at participating institutes in the cluster and SE²A partner institutions. [more](#)



April, 2020

Gamification in SE²A **A new SE²A gamification platform will serve to share and communicate newest research lines in future aviation with interested citizens.**

How important is sustainable flying for you? The Cluster of Excellence SE²A started with the development of a new interactive format to bring game-changing technological developments in aviation as early as possible to the future users: passengers can learn about future aircraft designs and propulsion & energy concepts in a new gamification platform. The challenge is to deal with everybody's own, very personal demands on future flying and the question if they are compatible with the offered technological advancements. SE²A

together with the TU Braunschweig start-up BeSu.Solutions is currently in the design-phase of the gamification test environment, which will be publicly available at the Hannover Airport in autumn. [more](#)

March 5-6, 2020

Doctoral researchers retreat at Burg Warberg

On March 5th-6th, 2020 the doctoral researchers of SE²A spent two days at Burg Warberg to network and design their program for the SE²A Research Training Group (RTG). We welcome the two new representatives elected by the doctoral researchers. Congratulations to Hendrik Traub und Maximilian Rolinck! [more](#)



// INTERNATIONAL COOPERATION



January 17, 2020

Joint Korean-German battery workshop

Exchange on challenges, insights and solutions for Li-metal batteries

On January 17, 2020, the Cluster of Excellence for Sustainable and Energy-Efficient Aviation – SE²A held a joint Korean-German battery workshop together with researchers from reknown Korean institutions. Prof. Krewer (INES) and her colleagues from the Cluster of Excellence SE²A together with Prof. Hee-Tak Kim (Korea Advanced Institute of Science and Technology, KAIST) invited to discuss newest technical approaches and potential solutions in the light of battery technology as enabler for the energy transition in the aviation mobility sector. [more](#)

// WELCOME OF NEW SE²A MEMBERS

New SE²A Board Members: We welcome the two new SE²A board members, Priv.-Doz. Dr. Gabriele Raabe and Prof. Dr.-Ing. Regine Mallwitz, who joined the board in April 2020. We would like to express our sincere thanks to our previous board members, Prof. Dr.-Ing. Ulrike Krewer and Prof. Dr. Laura De Lorenzis, who left the TU Braunschweig.

- **PD Dr. Raabe** is head of the research group Molecular Thermodynamics at the Institute of Thermodynamics. Her research focusses on simulation and modelling of thermo-physical material properties. In addition, G. Raabe will support as a board member the early career program in the cluster.
- **Prof. Mallwitz** holds the Chair of Power Electronics at the Institute for Electrical Machines, Traction and Drives. Her research is in the area of theoretical and experimental analysis of power electronics systems.

New Scientific Coordinator of ICA B: In May 2020, Johannes Dittmann will join the SE²A managing office as new scientific coordinator of the cluster area ICA B - "Flight Physics and Vehicle Systems".

New PhD representatives: We welcome the two new representatives elected by the doctoral researchers. Congratulations to Hendrik Traub (Institute of Adaptronics and Function Integration, IAF) and Maximilian Rolinck (Institute of Machine Tools and Production Technology, IWF)!

// RESEARCH

The **Cluster of Excellence "Sustainable and Energy-Efficient Aviation"** is an interdisciplinary research center with the purpose of investigating technologies for a sustainable and eco-friendly air transport system. Scientists from aerospace, electrical, energy and chemical engineering are working on the reduction of emissions and noise, as well as recycling and life-cycle concepts for airframes and improvements in air traffic management. Technische Universität Braunschweig, the German Aerospace Center (DLR), Leibniz University Hannover (LUH), the Braunschweig University of Art (HBK) and the National Metrology Institute of Germany (PTB) have joined forces in this extraordinary scientific undertaking. The Cluster organisation is structured in three Integrated Cluster Areas (ICAs) reflecting the mission-critical research demands and following a coherent and coordinated roadmap. The three ICAs resulting from our assessment of critical research demand are:

ICA A: Assessment of the Air Transport System

The goal of this cluster area is the development of comprehensive criteria and metrics for sustainable air transport that can serve as a basis for decision-making and future scenarios. [more](#)

ICA B: Flight Physics and Vehicle Systems

This cluster area takes an in-depth look at technologies that have the potential to significantly reduce the power required from the propulsion system. [more](#)



ICA C: Energy Storage and Conversion

Even with major advances in aircraft drag and propulsion efficiency, carbon emissions can only be reduced, while carbon-free aviation requires new concepts for the energy supply. The cluster looks at advanced lithium-sulfur chemistry for solid-state batteries as well as load bearing batteries. [more](#)



// WORKSHOP ANNOUNCEMENT

July 13-15, 2020: Research Software Engineering-Workshop

The workshop on "Sustainable Software Development in Science" will be held by the Center for Mechanics, Uncertainty and Simulation in Engineering in cooperation with partners from science. The three days will focus on "Principles, Design Patterns and TDD", "Advanced C++" and "High Performance Computing". The workshop is mainly aimed at PhD students at the TU Braunschweig and partner institutions as well as research facilities. [more](#)

Please make a note: The "TAU Workshop" had to be postponed due to the corona pandemic and will take place in a virtual format in June. Further information will follow.

// EVENT ANNOUNCEMENT



SE²A - Day of Sustainable Aviation/ SE²A - Tag der "nachhaltigen Luftfahrt" (11-16 h) September 19, 2020 | Braunschweig

The Cluster of Excellence SE²A will have its first open day event at the TU Braunschweig research campus north/Research airport. In different locations and formats such as guided tours, visits, science slam and a children's program visitors from Braunschweig can learn about future aviation concepts and meet with the researchers.



Cluster of Excellence Symposium October 27-28, 2020 | Braunschweig

Please make a note! After a successful symposium last year, the second SE²A Symposium in October 2020 will continue its fruitful scientific exchange: External speakers, SE²A researchers and guests will have again the opportunity to exchange their ideas, discuss approaches,

and network.

The German Aerospace Congress (DLRK) September 1-3, 2020 | Aachen



The German Aerospace Congress (DLRK) is a central event of the German-speaking aviation community. The Cluster of Excellence SE²A will participate in the Congress with two own SE²A-sessions bringing Cluster research to the front in the research community.

More information: <https://dlrk2020.dglr.de/>

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Kontakt:

Technische Universität Braunschweig
Sustainable and Energy Efficient Aviation
Hermann-Blenk-Str. 42,
38108 Braunschweig
Tel.: (0531) 391-94202
Mail: se2a@tu-braunschweig.de