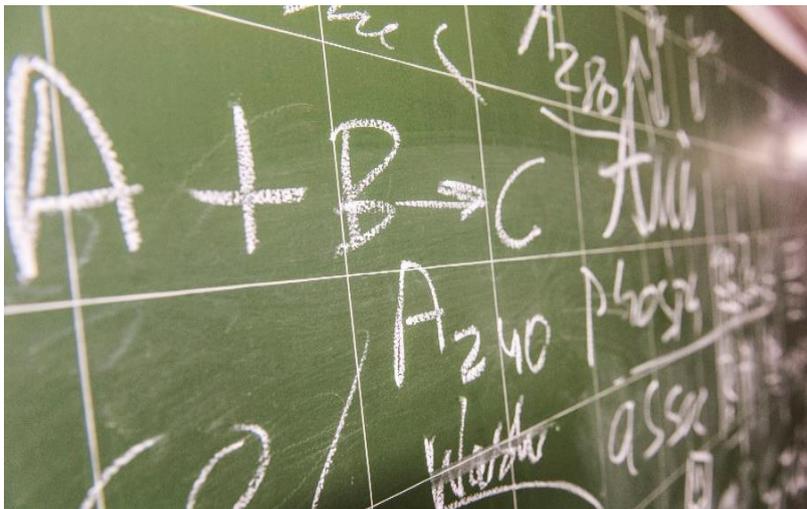


New KIT Center for Mathematics Established

The Center “Mathematics in Sciences, Engineering, and Economics“ Pools Interdisciplinary Mathematical Research at KIT and Makes It Internally and Externally Visible



The new MathSEE Center bundles mathematical research conducted by KIT scientists in different disciplines. (Photo: Markus Breig/KIT)

Mathematics is a fundamental component in science: applications and methods, such as simulations, data evaluations, or computer-based systems, would not be possible without arithmetic, algebra or statistics. At Karlsruhe Institute of Technology (KIT), scientists from various disciplines use mathematics in their research. They now contribute their expertise to the new Center “Mathematics in Sciences, Engineering, and Economics” (MathSEE): the platform bundles interdisciplinary mathematical research at KIT.

Within MathSEE, scientists from mathematics, natural sciences, engineering, and economics will cooperate to further develop and establish new research collaborations and projects. For this purpose, the KIT Center will offer specific scientific events and initial funding for research projects.

“Mathematical research is increasingly interconnected with other natural and engineering sciences”, says Professor Oliver Kraft, KIT Vice-

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President for Research. “With MathSEE, we give this trend an internationally unique shape that will sustainably advance KIT’s mission to strengthen fundamental research, create knowledge for society, and enable research-based education.”

Professor Martin Frank, Scientific Spokesperson of MathSEE and Director of the Steinbuch Centre for Computing (SCC) of KIT, adds: “As key technology of digitization, mathematics essentially contributed to coping with challenges of our time. Apart from computer-based sciences, this includes data-driven methods, such as machine learning, which are mainly based on statistics and optimization. Moreover, we hope that interesting questions in applications will trigger the development of new mathematical methods.”

The Center will start with 60 scientists from 22 institutes of KIT. Their research is structured in four areas with different methodological approaches:

- Mathematical modeling, differential equations, numerical analysis and simulation
- Inverse problems, optimization
- Mathematical structures: shapes, geometry, number theory and algebra
- Stochastic modeling, statistical data analysis and prediction

In addition, the Graduate School “MathSEED” will offer structured events and courses for doctoral researchers. Interdisciplinary support of junior scientists is, among others, the focus of the “SiMET” Research Training Group: engineers and mathematicians jointly support doctoral candidates working on the modeling and simulation of lithium-ion battery cells.

More information: www.simet.kit.edu (in German only)

KIT’s strength in mathematical research is reflected for example by the Collaborative Research Center “Wave phenomena.” Here, mathematicians and scientists from photon and quantum electronics collaborate to analytically understand, numerically simulate, and eventually manipulate the propagation of light and sound waves under realistic scenarios.

More information: www.waves.kit.edu/index.php

Details on the KIT Center MathSEE:
www.mathsee.kit.edu/english/index.php

Being “The Research University in the Helmholtz Association,” KIT creates and imparts knowledge for the society and the environment. It is the objective to make significant contributions to the global challenges in the fields of energy, mobility and information. For this, about 9,300 employees cooperate in a broad range of disciplines in natural sciences, engineering sciences, economics, and the humanities and social sciences. KIT prepares its 25,500 students for responsible tasks in society, industry, and science by offering research-based study programs. Innovation efforts at KIT build a bridge between important scientific findings and their application for the benefit of society, economic prosperity, and the preservation of our natural basis of life.

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