In March 2019, the Research Institute of Automotive Engineering and Vehicle Engines Stuttgart (FKFS) invites you to the 19th Stuttgart International Symposium “Automotive and Engine Technology”. I heartily welcome all participants to two fascinating congress days, dealing with nothing less than the future of our mobility. I am therefore delighted to be the patron of this event once again this year.

FKFS has been demonstrating for decades that it is a reliable partner in many areas. The local automotive industry profits from a highly-regarded research institute in close proximity. Thanks to the cooperation with Stuttgart University, students are able to gain access to the regional automotive sector. As a hotbed of specialists and experts, FKFS provides a valuable source of young engineers who help keep Baden-Wuerttemberg one of the leading automotive locations in the world.

The state government holds FKFS in high esteem as a long-term cooperation partner. This is underlined, for example, by the wind tunnels the State of Baden-Wuerttemberg set up at Stuttgart University, which FKFS still operates for the University today. In the “Baden-Wuerttemberg Automotive Industry Strategic Dialog” (which was also set up by the state government), FKFS has a permanent role in collaborative work on a concept for the future.

The clock is ticking for new mobility solutions. Climate targets are looming ever closer and it is only possible to fulfill them with new, cleaner drive technologies. This is a huge challenge. However, we must not regard it as a burden, but as an opportunity we must take in order to actively shape the mobility of the future. Because those shaping the technology will remain the global leaders in it. Therefore, it is one of the state government’s key tasks to guide the car manufacturing state Baden-Wuerttemberg into a future which is both environmentally-friendly and successful. To achieve this, interlinking science, politics, business and civic society is essential.

With this year’s Symposium motto, “The transformation of the automotive industry”, FKFS is tackling the central challenges for the future of the automotive industry head-on. At the same time, it forms an important platform to bring various stakeholders together and enter intensive specialist discussions. I thank FKFS and all the participating companies for organizing and implementing the Symposium. I wish the participants interesting lectures, exciting discussions and new inspiration.
The transformation of the automotive industry

The automotive industry is currently undergoing enormous and rapid changes. Demands upon research and development are constantly increasing, and new fields of research are arising as well. Both manufacturers and suppliers are developing new business models in order to remain competitive. The European Environment Ministers’ target to reduce vehicle CO₂ emissions by a total of 35 per cent by 2030 (compared with the year 2020) highlights the necessity and urgency of a technological shift. Most discussions regarding potential solutions concern the electrification of drives, but the use of renewable fuels (or synthetic fuels) is also on the agenda.

More than a year ago, the State of Baden-Württemberg set up the “Automotive Industry Strategic Dialog”. This alliance of politics, business, science, trade unions, consumer organizations, environmental organizations and civic society is pursuing a holistic approach, tapping into innovation potential beyond traditional industry sector limits and aiming to drive the automotive industry in Baden-Württemberg forward successfully.

Drives and emissions, autonomous driving and networking, disruptive vehicle architectures, driving dynamics control systems and thermal management: the automotive industry has plenty to talk about. Experts from science and industry will be discussing these topics and many more at the 19th Stuttgart International Symposium “Automotive and Engine Technology” from 19 – 20 March 2019 at the Haus der Wirtschaft. The latest technology, future concepts and new research results will be presented in sessions running in six parallel strands, with more than a hundred lectures.

There will be a podium discussion on the topic “The transformation of the automotive industry”, with prominent participants. We have also been able to attract very high-profile speakers for our plenary lectures. There will be many opportunities for exchanging ideas; not only during the breaks and at the trade exhibition, but at the special evening event too.

We look forward to welcoming you to Stuttgart – the birthplace of the automobile – and wish you two highly-interesting days at the 19th Stuttgart International Symposium!

Prof. Dr. Michael Bargende

Prof. Dr. Hans-Christian Reuss

Prof. Dr. Jochen Wiedemann
FKFS is an independent institute and provides research and development services for the international automotive industry. The Institute offers highly specialized test stands and test facilities with a unique range of self-developed measurement and testing, years of experience with the development of simulation tools and excellent know-how of the employees.

**FKFS – Research Institute of Automotive Engineering and Vehicle Engines Stuttgart**  
Pfaffenwaldring 12 | 70569 Stuttgart | www.fkfs.de  
Phone +49 711 685-65888 | symposium@fkfs.de

**Scientific Management**  
Prof. Dr. Michael Bargende, Managing Board Automotive Powertrains  
Prof. Dr. Hans-Christian Reuss, Managing Board Automotive Mechatronics  
Prof. Dr. Jochen Wiedemann, Managing Board Automotive Engineering

**FVV – Research Association for Combustion Engines**  
The FVV – founded in 1956 – has developed itself to the world’s unique network of research in engines and turbomachinery. It promotes the collective, precompetitive research in the industry and joins industrial efficiency and emissions of engines and turbines continuously – for the benefits of the economy, environment and society. [www.fvv-net.de](http://www.fvv-net.de)

The latest information about the 19th Stuttgart International Symposium is available at any time on the new FKFS app. [Get the App!](#)
8:00 Registration/Signing-in

9:00 Welcome Prof. Dr. Hans-Christian Reuss, Chairman of the Board FKFS, Managing Director IVK, University of Stuttgart

Opening Address Prof. Dr. Dr. Wolfram Ressel, Chancellor of the University of Stuttgart

9:30 Individual mobility in tomorrow’s cities
Wolf-Henning Scheider, Chief Executive Officer, ZF Friedrichshafen AG

10:00 Coffee break

10:30 Automated Driving vs. Attribute Branding?

10:30 Emission (Denox) pg. 6

10:30 Electric Mobility I pg. 6

10:30 Hybrid Concepts pg. 7

10:30 Advanced Driver Assistance Systems pg. 7

12:00 Lunch break

13:00 Powertrain Concepts and Fuels pg. 6

13:00 Autonomous Driving I pg. 6

13:00 Electric Mobility II pg. 6

13:00 Aerodynamics pg. 7

13:00 Vehicle Concepts pg. 7

13:00 Simulation Combustion Engines pg. 7

15:00 Coffee break

15:30 CASE & Digital vehicle – the future of mobility
Georges Massing, Director User Interaction & Software, Daimler AG

16:05 Automotive Industry – Clusters and Business Models pg. 8

16:05 SI-Engines pg. 8

16:05 Electric Mobility III pg. 8

16:05 Vehicle Dynamics – Control Systems pg. 9

16:05 Water Injection and Emission Concepts pg. 9

16:05 Engine Mechanics and Charging pg. 9

18:05 End of the parallel sections

18:30 Social evening to take place in the ”Alte Stuttgarter Reithalle” pg. 9

WEDNESDAY, 20 MARCH 2019

8:30 The new Way of Driving pg. 10

8:30 Hybrid Powertrain pg. 10

8:30 Test Bench Technology pg. 10

8:30 Software and Development Methods I pg. 11

8:30 Chassis pg. 11

8:30 Reports from FVV Projects pg. 11

10:00 Coffee break

10:30 E-mobility from EnBW’s perspective – status and outlook
Dr. Frank Mastiaux, Chief Executive Officer, EnBW Energie Baden-Wuerttemberg AG

11:05 Emission (RDE) pg. 10

11:05 Fuel Cell pg. 10

11:05 New Vehicles pg. 10

11:05 Software and Development Methods II pg. 11

11:05 Thermal Management pg. 11

11:05 Batteries pg. 11

12:35 Lunch break

13:30 System Architecture pg. 12

13:30 Autonomous Driving II pg. 12

13:30 48 Volt Hybrid pg. 12

13:30 Networking and Architecture pg. 13

13:30 Lightweight Design pg. 13

13:30 NVH pg. 13

14:30 Coffee break

15:00 Opportunities for a leading global technology provider in an era of uncertainty
Dr. Mathias Pillin, Executive Vice President with responsibility for Electrification, Robert Bosch GmbH

15:30 Panel discussion “The transformation of the automotive industry”

Moderation: Johannes Winterhagen, Redaktionsbüro delta eta

Participants:
Dr. Nicole Hoffmeister-Kraut, Ministry of Economic Affairs, Labour and Housing of Baden-Wuerttemberg
Georges Massing, Daimler AG
Dr. Mathias Pillin, Robert Bosch AG
Prof. Günther Schuh, e.GO Mobile AG
Prof. M. A. Weissenberger-Eibl, Fraunhofer Institute for Systems and Innovation Research ISI / iTM, Karlsruhe Institute of Technology

16:30 Keynote
Dr. Nicole Hoffmeister-Kraut, Ministry of Economic Affairs, Labour and Housing of Baden-Wuerttemberg

16:45 Closing remarks Prof. Dr. Jochen Wiedemann, Board of Directors FKFS, Professor of Automotive Engineering IVK, University of Stuttgart

17:00 End of the event
## PROGRAM TUESDAY, 19 MARCH 2019

### KÖNIG-KARL-HALLE 2nd floor

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>9:00</td>
<td>Welcome Prof. Dr. Hans-Christian Reuss, Chairman of the Board FKFS, Managing Director IVK, University of Stuttgart</td>
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<td>Individual mobility in tomorrow’s cities Wolf-Henning Scheider, Chief Executive Officer, ZF Friedrichshafen AG</td>
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### KÖNIG-KARL-HALLE 2nd floor

**Automated Driving vs. Attribute Branding?**
Chairperson: Prof. Dr. Jochen Wiedemann

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<tr>
<td>10:30</td>
<td>Motion control solutions for automated driving systems at BMW</td>
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<td>Alexander Kron, BMW AG</td>
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**Emission (Denox)**
Chairperson: Prof. Dr. Georg Wachtmeister

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<tr>
<td>10:30</td>
<td>Denoxtronic 5.3 – a modular system for applications worldwide</td>
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<td>Michael Rauff, E. Weingarten, M. Muslija, Robert Bosch GmbH</td>
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**Powertrain Concepts and Fuels**
Chairperson: Prof. Dr. Michael Bargende

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<tr>
<td>13:00</td>
<td>Technical scenarios for the decarbonization of road transport</td>
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<td>Stephan Neugebauer, Europäische Technologieplattform für den Straßenverkehr (ERTRAC) / BMW Group</td>
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**Comparative evaluation of power-to-X processes for the supply of renewable fuels**
Wolfgang Kopp, M. Heneka, DVGW-Forschungsstelle am EBI des KIT

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<td>13:30</td>
<td>Evaluation of a present friction coefficient information for the improvement of vehicle systems</td>
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<td>Sebastian Staiger, S. Nosrat Nezami, M. Unterreiner, Dr. Ing. h.c. F. Porsche AG; D. Schramm, Universität Duisburg-Essen</td>
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**Modeling of real fuels for an effective virtual engine development with focus on alternative fuels**
Marco Chiodi, F. Cupo, M. Bargende, FKFS

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<tr>
<td>14:00</td>
<td>Kinetosis at autonomous driving Carsten Lecon, Hochschule Aalen</td>
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**Sustainable drive concepts for future motorsports**
Lea Schwarz, M. Bargende, IVK, Universität Stuttgart; S. Dreyer, U. Baretzky, W. Kotauschek, F. Bach, AUDI AG

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<td>Magna’s full scalable approach for the electrified powertrain of the future Carsten Bünnder, Magna Powertrain</td>
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### MEIDINGER-SAAL 1st floor

**BERTHA-BENZ-SAAL 1st floor**
Chairperson: Prof. Dr. Nejila Parspour

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**Active materials for electrical motors – leverage for reducing costs and increasing performance**
Moritz Kilper, H. Naumoski, Daimler AG

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<td>Modular HD – EGT system with autarcic thermal management for high urban NOx conversion</td>
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<td>Klaus Schrewie, B. Maurer, I. Zirkwa, C. Menne, HJS Emission Technology GmbH &amp; Co. KG</td>
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**New experimental insights in AdBlue-Spray/Wall interaction and its impacts on EGT system design**
David Schweigert, B. Damson, H. Lüders, C. Becker, Robert Bosch GmbH; O. Deutschmann, Karlsruher Institut für Technologie (KIT)

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### 12:00 Lunch break

### Autonomous Driving I
Chairperson: Prof. Dr. Dr. Michael Weyrich

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<td>13:00</td>
<td>Extension of the environmental model for a neural networks based lane change prediction model</td>
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<td>Martin Krüger, A. Stockem Novo, T. Nattermann, M. Mohamed, ZF Group; T. Bertram, TU Dortmund</td>
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**Impact of modulation strategies on the power loss of the DC-Link capacitor of an inverter**

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<td>The Six-Step Mode: unwanted or rather the ideal voltage modulation method</td>
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<td>Thomas Zeltwanger, H. Sprenger, M. Damson, M. Gupta, Robert Bosch GmbH</td>
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**Fail-operational powertrain for automated driving**
Ahmet Kilic, T. Shen, J. Faßnacht, Robert Bosch GmbH; H.-C. Reuss, IVK, Universität Stuttgart

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<td>10:00</td>
<td>Coffee break</td>
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<td>10:30</td>
<td>Essential predictive information for high fuel efficiency and local</td>
<td>REUTLINGEN ROOM</td>
<td>Prof. Dr. Christian Beidl</td>
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<td>emission free driving with PHEVs</td>
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<td>Tobias Schürmann, D. Görke, S. Schmiedler, T. Gödecke, Daimler AG; K.</td>
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<td>Böhm, Hochschule Esslingen; M. Bargende, IVK, Universität Stuttgart</td>
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<td>11:00</td>
<td>Analogies for the hybrid drive chain design</td>
<td>REUTLINGEN ROOM</td>
<td>Michael Auerbach, O. Zirn, Hochschule</td>
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<td>Esslingen</td>
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<td>11:30</td>
<td>A new distribution of torque required by the driver in a hybrid vehicle</td>
<td>REUTLINGEN ROOM</td>
<td>Setareh Gherekhlooo, C. A. Malonga,</td>
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<td>regardless of the number of actuators</td>
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<td>Makosi, Daimler AG</td>
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<td>13:00</td>
<td>External water management: a predictive challenge</td>
<td>MANNHEIM ROOM</td>
<td>Prof. Dr. Klaus Dietmayer</td>
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<td>Cameron Tropea, J. Feldmann, D. Rettenmaier, P. Seiler, TU Darmstadt;</td>
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<td>M. Ade, Daimler AG</td>
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<td>Aerodynamic study on the vehicle rear shape parameters with respect to</td>
<td>MANNHEIM ROOM</td>
<td>Prof. Dr. Klaus Dietmayer</td>
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<td>Chenyi Zhang, IVK, Universität Stuttgart; D. Stoll, T. Kuthada, FKFS;</td>
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<td>J. Wiedemann, FKFS/IVK, Universität Stuttgart</td>
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<td>14:00</td>
<td>Development of an SUV reference model for aerodynamic research</td>
<td>MANNHEIM ROOM</td>
<td>Prof. Dr. Klaus Dietmayer</td>
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<td>Max Tanneberger, C. Zhang, IVK, Universität Stuttgart, T. Kuthada,</td>
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<td>F. Wittmeier, J. Wiedemann, FKFS; J. Nies, Röchling Automotive SE &amp; Co.</td>
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<td>14:30</td>
<td>One size fits all: an adaptive test section design for climatic wind</td>
<td>MANNHEIM ROOM</td>
<td>Prof. Dr. Klaus Dietmayer</td>
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<td>Frank Baader, WBI GmbH</td>
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<td>10:00</td>
<td>Coffee break</td>
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<td>New entry OEM – a global phenomenon</td>
<td>KARLSRUHE ROOM</td>
<td>Prof. Dr. Hermann Winner</td>
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<td>David Ludwig, MAGNA STEYR Fahrzeugtechnik AG &amp; Co KG</td>
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<td>11:00</td>
<td>Consistent application of systems engineering and simulation for cross</td>
<td>KARLSRUHE ROOM</td>
<td>Prof. Dr. Hermann Winner</td>
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<td>Marcus Boumans, U. Schulmeister, M. Johannaber, Robert Bosch GmbH</td>
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<td>11:30</td>
<td>Automotive megatrends and their impact on NVH</td>
<td>KARLSRUHE ROOM</td>
<td>Prof. Dr. Hermann Winner</td>
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<td>Georg Eisele, M. Kauth, C. Steffens, FEV Europe GmbH; P. Glusk, FEV</td>
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<td>Consulting GmbH</td>
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<td>13:00</td>
<td>Continuous implementation of 0D/1D engine models in the development</td>
<td>KARLSRUHE ROOM</td>
<td>Prof. Dr. Bernhard Geringer</td>
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<td>process of racecar powerunits</td>
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<td>M. Grill, FKFS; M. Bargende, IVK, Universität Stuttgart</td>
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<td>13:30</td>
<td>Integrated quasi-dimensional flow model with combustion and emission</td>
<td>KARLSRUHE ROOM</td>
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<td>model for VVT diesel engines</td>
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<td>Universität Stuttgart</td>
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<td>Method for concept design and optimization of twist beam axles</td>
<td>KARLSRUHE ROOM</td>
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<td>Xiangfan Fang, Universität Siegen</td>
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<td>A 1D co-simulation approach for the prediction of pollutant emissions</td>
<td>KARLSRUHE ROOM</td>
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<td>of internal combustion engines during steady-state conditions and</td>
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<td>Angelo Onorati, T. Cerri, G. D’Enrico, G. Montenegro, Politecnico Di</td>
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<td>Milano; G. Koltsakis, Z. Samaras, AUTh; V. Tziolas, N. Zingopis, M.</td>
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<td>Mikos, Exothermia; C. Bach, J. Rojewski, P. Dimopoulos Eggenschwiler,</td>
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<td>15:00</td>
<td>Coffee break</td>
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**Hybrid Concepts**
Chairperson: Prof. Dr. Christian Beidl

**Automotive Trends**
Chairperson: Prof. Dr. Hermann Winner

**Advanced Driver Assistance Systems**
Chairperson: Prof. Dr. Klaus Dietmayer

**Aerodynamics**
Chairperson: Prof. Dr. Lennart Löfdahl

**Vehicle Concepts**
Chairperson: Prof. Dr. Thomas Maier

**Simulation Combustion Engines**
Chairperson: Prof. Dr. Bernhard Geringer
<table>
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<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>15:30</td>
<td>CASE &amp; Digital vehicle – the future of mobility</td>
<td>Georges Massing, Director User Interaction &amp; Software</td>
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<tr>
<td>16:05</td>
<td>Automotive Industry – Clusters and Business Models</td>
<td>Albrecht Fridrich, RKW Baden-Württemberg GmbH</td>
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<tr>
<td>16:05</td>
<td>CHARGING CONCEPTS FOR E-MOBILITY – ACTUAL DEVELOPMENTS AND FUTURE CHALLENGES</td>
<td>Ursel Willrett, IAV GmbH</td>
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<td>16:35</td>
<td>The role of clusters in supporting french automotive industry’s competitiveness and innovation</td>
<td>Thomas Röhr, Pôle Véhicule du Futur and ESTA School of Business and Technology</td>
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<tr>
<td>16:35</td>
<td>Phenomenology and analysis of LSPI gas pressures</td>
<td>Christoph Beerens, R. Fischer, C. Trabold, MAHLE International GmbH</td>
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<td>16:35</td>
<td>Validation of range estimation for electric vehicles based on recorded real-world driving data</td>
<td>Patrick Petersen, J. Langner, S. Otten, E. Sax, FZI Forschungszentrum Informatik; S. Scheubner, M. Vaillant, S. Fünfgeld, Dr. Ing. h.c. F. Porsche AG</td>
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<td>17:05</td>
<td>The potential of collaborative business model innovation in automotive eco-systems</td>
<td>Georg von der Ropp, BMI Lab Deutschland GmbH</td>
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<td>17:05</td>
<td>Combustion stability improvement with turbulence control by air injection for a lean-burn SI engine</td>
<td>Takanori Suzuki, SOKEN Inc.; B. Lehrheuer, T. Ottenwälder, M. Mally, S. Pischinger, RWTH Aachen University</td>
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<tr>
<td>17:05</td>
<td>Air intake temperature cooling tanks to pressure waves action and adapted air intake geometry</td>
<td>Vincent Raimbault, M. Jéréme, MANN+HUMMEL France; B. Heinz, MANN+HUMMEL GmbH; G. Stéphane, RENAULT; C. David, École Centrale de Nantes; M. Bargende, IVK, Universität Stuttgart</td>
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<td>17:05</td>
<td>Smart grids in mobile fleet operations</td>
<td>Manuel Klein, D. Mitrovic, EKU Power Drives GmbH</td>
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<td>17:35</td>
<td>Infrared-based determination of the type and condition of the road surface</td>
<td>Lakshan Tharmakularajah, J. Döring, ITEM, Universität Bremen</td>
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<td>18:05</td>
<td>Finish</td>
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FESTIVE EVENING RECEPTION

Tuesday, 19 March 2019 | 18:30 in the "Alten Stuttgarter Reithalle" Maritim Hotel | Seidenstraße 34 | 70174 Stuttgart

Experience an exceptional evening with amusing entertainment.

Program:
18:30 Sparkling wine reception
19:00 Welcome by Prof. Dr. Michael Bargende, Board of Directors FKFS, Professor of Automotive Powertrains IVK, University of Stuttgart
Followed by: Dinner

Live Act:
Sir Waldo Weathers

The virtuoso saxophonist and legendary soul singer, Sir Waldo Weathers, was knighted in 2006. This passionate musician has shared a stage with other music legends such as Charley Pride, B.B. King, Phil Collins, Michael Jackson and James Brown.

With his exhilarating show, "A Tribute to James Brown", Sir Waldo Weathers and his ten-piece band bring the funk and soul of the 1980s back to life.

Evening program ends at approx. 23:00.
PROGRAM WEDNESDAY, 20 MARCH 2019

KÖNIG-KARL-HALLE 2nd floor
The new Way of Driving
Chairperson: Prof. Dr. Hans-Christian Reuss
8:30 New vehicle concepts for future business models
Horst E. Friedrich, Deutsches Zentrum für Luft- und Raumfahrt (DLR)

MEIDINGER-SAAL 1st floor
Hybrid Powertrain
Chairperson: Prof. Dr. Günter Hohenberg
8:30 Dedicated Hybrid Powertrain (DHP) – the hybrid powertrain as an intelligent overall system
Jörg Gindele, Magna Powertrain

BERTHA-BENZ-SAAL 1st floor
Test Bench Technology
Chairperson: Prof. Dr. Karl-Ludwig Haken
8:30 Test in areas of application with regulatory requirements on the example of WLTP
Jan Jacob, Werum Software & Systems AG

9:00 UNICARagil – new architectures for disruptive vehicle concepts
Dan Keilhoff, H.-C. Reuss, IVK, Universität Stuttgart

9:30 New vehicle concepts for mobile vacation
Rüdiger Freimann, Erwin Hymer Group SE; U. Gillich, G. Gumpoltsberger, ZF Friedrichshafen AG; R. Kaiser, TTT – The Team Technology

10:00 Coffee break

10:30 E-mobility from EnBW’s perspective – status and outlook
Dr. Frank Mastiaux, Chief Executive Officer, EnBW Energie Baden-Württemberg AG

Emission (RDE)
Chairperson: Prof. Dr. Thomas Koch
11:05 RDE thermal management – from road to lab
Christian Beidl, J. Hipp, TU Darmstadt; S. Geneder, G. Hohenberg, IVD Deutschland GmbH

Fuel Cell
Chairperson: Prof. Dr. Stefan Pischinger
11:05 Using of an electrochemical compressor for hydrogen recirculation in fuel cells
Wilhelm Wiebe, S. Schmitz, DHBW Mannheim

New Vehicles
Chairperson: Prof. Dr. Thomas Vietor
11:05 The new Volkswagen Touareg – technical innovation on 4 wheels
Stefan Gies, J. Brüning, L. Liesner, Volkswagen AG

11:35 Further-on optimization of NOx Emission under EU Real Driving Emission (RDE) regulation

11:35 Development of electric drive concepts for fuel cell vehicles for Germany and China
Katharina Bause, A. Braumandl, A. Stephan, G. Xiao, M. Behrendt, Karlsruher Institut für Technologie (KIT)

12:05 Developing GDI engines for minimum particle emissions in RDE test conditions
Ernst Winklhofer, A. Hirsch, AVL List GmbH

12:05 Test cell adaption from engine to fuel cell development
Henning Müntermann, WBI GmbH; J. Knust, J. Fischer, SBI GmbH

12:35 Lunch break

12:35 The aerodynamics development of the new Mercedes-Benz GLE
Etienne Pudell, Daimler AG

12:35 The aerodynamics of the new Porsche 911 Carrera
Bernd Jachowski, Dr. Ing. h.c. F. Porsche AG

12:35 Lunch break
**Software and Development Methods I**  
Chairperson: Prof. Dr. Eric Sax

8:30 Safety and security – basic vulnerabilities and solutions  
Hubert B. Keller, Karlsruher Institut für Technologie (KIT)

9:00 Tool-based development of efficient automotive multi-core systems  
Patrick Friederich, A. Zeeb, Vector Informatik GmbH

9:30 Architecture and independence controller for deep learning in safety critical applications  
Ulrich Bodenhausen, AI Coaching und Vector Consulting Services GmbH

10:00 Coffee break

**KARLSRUHE ROOM 1st floor**

**Chassis**  
Chairperson: Prof. Dr. Xiangfan Fang

8:30 Evaluation of competition and virtual rear-subframes by means of the data envelopment analysis  
Martin Kundla, BMW Group; D. Schramm, Universität Duisburg-Essen

9:00 Evaluation of the required accuracy of chassis models in the comfort relevant frequency range by intuitive switching of the level of detail in SimulationX  
Tom Wiedemann, ESI ITI GmbH

9:30 Cause and effect chains analysis of rollover behavior with respect to chassis design  
Fan Chang, K. Krauter, J. Kubenz, G. Prokop, IAD, TU Dresden; S. van Putten, A. Ohletz, AUDI AG

**MANNHEIM ROOM 1st floor**

**Reports from FVV Projects**  
Chairperson: Dr. Karl Kollmann

8:30 Investigation of interactions between fuels and fuel leading components of Plug-In-Hybrid electric vehicles  
Sebastian Feldhoff, OWI Oel-Waerme-Institut gGmbH

9:00 Acoustic transmission loss in turbochargers  
Hendrik Ruppert, M. Günther, S. Pischinger, RWTH Aachen University

9:30 Downsizing of HD engines by air path variabilities II  
Peter Elits, M. Betz, TU Braunschweig

11:05 AC-APU – a hydrogen based AC unit for electric vehicles  

11:05 Automated & IT-backed loadprofile-generation and evaluation of lithium ion batteries  

11:05 A complete digital engine cooling module catalog for balancing cooling and aerodynamics  
Satheesh Kandasamy, C. Chang, Dassault Systemes; T. Yasuda, Y. Yagi, S. Miura, Denso Corporation

11:05 Challenge battery safety – solutions by multifunctional battery housings B:HOUSE®  
Jobst Kerspe, TEB Dr. Kerspe; M. Fischer, König Metall GmbH & Co. KG

11:05 Prognosis of the life time of urban bus batteries in the context of the overall system design  
Martin Ufert, TU Dresden

11:35 Lunch break

**Software and Development Methods II**  
Chairperson: Prof. Dr. Tobias Gerhard Flämig-Vetter

11:05 AI – challenges in application with bus data in the automotive sector  
Alexander Fafl, M. Floruß, Vector Informatik GmbH; F. Pistorius, Karlsruher Institut für Technologie (KIT)

11:35 Use of a criticality metric for assessment of critical traffic situations as part of SePIA  
Matthias Lehmann, G. Prokop, IAD, TU Dresden

12:05 Simulating surrounding traffic for interactive driving simulators  
Michael Behrisch, D. Behnecke, Deutsches Zentrum für Luft- und Raumfahrt (DLR)

12:05 Thermal design of hand-held power tools with electric and combustion engines  
Silek Kaminski, G. Groskopf, ANDREAS STIHL AG & Co. KG

**Thermal Management**  
Chairperson: Prof. Dr. Stefan Böttinger

11:05 Use of a criticality metric for assessment of critical traffic situations as part of SePIA  
Matthias Lehmann, G. Prokop, IAD, TU Dresden

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**Batteries**  
Chairperson: Prof. Dr. Andreas Friedrich

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12:35 Lunch break
PROGRAM WEDNESDAY, 20 MARCH 2019

KÖNIG-KARL-HALLE 2nd floor

System Architecture
Chairperson: Prof. Dr. Gerhard Hettich

13:30 Functional architecture and E/E: Architecture – a challenge for the automotive industry
Detlef Zerfowski, Andreas Lock, Robert Bosch GmbH

14:00 Integrated avionics architectures
Reinhard Reichel, ILS, Universität Stuttgart

MEIDINGER-SAAL 1st floor

Autonomous Driving II
Chairperson: Prof. Dr. Clemens Gühmann

13:30 Safety Assessment of Autonomous and Connected Vehicles by a Model-based Traffic Simulation Framework
Mustafa Saraoglu, A. Morozov, K. Janschek, IfA, TU Dresden

14:00 Identifying relevant traffic situations based on human decision making
Christoph Siepl, F. Bock, B. Huber, AUDI AG; A. Djanatliev, R. German, Friedrich-Alexander Universität Erlangen-Nürnberg

BERTHA-BENZ-SAAL 1st floor

48 Volt Hybrid
Chairperson: Prof. Dr. Helmut Eichlseder

13:30 Comparing 48V mild hybrid concepts using a Hybrid-Simulation-Toolkit
Anita Bongards, S. Mohon, BorgWarner Inc.

14:00 From virtual to reality – how 48V systems and operating strategies improve diesel emission
Hannes Wancura, M. Weißbäck, H. Mitterecker, AVL List GmbH; C. Kaup, AVL Schrick GmbH; S. Lange, AVL Deutschland GmbH; S. Hoffmann, B. Unterberger, HMETC GmbH

14:30 Coffee break

15:00 Opportunities for a leading global technology provider in an era of uncertainty
Dr. Mathias Pillin, Executive Vice President with responsibility for Electrification, Robert Bosch GmbH

15:30 Panel discussion “The transformation of the automotive industry”
Moderation: Johannes Winterhagen, Redaktionsbüro delta eta
Participants:
Dr. Nicole Hoffmeister-Kraut, Ministry of Economic Affairs, Labour and Housing of Baden-Wuerttemberg
Georges Massing, Daimler AG
Dr. Mathias Pillin, Robert Bosch AG
Prof. Günther Schuh, e.GO Mobile AG
Prof. Marion A. Weissenberger-Eibl, Fraunhofer Institute for Systems and Innovation Research ISI / iTM, Karlsruhe Institute of Technology

16:30 Keynote
Dr. Nicole Hoffmeister-Kraut, Ministry of Economic Affairs, Labour and Housing of Baden-Wuerttemberg

16:45 Closing remarks
Prof. Dr. Jochen Wiedemann, Board of Directors FKFS, Professor of Automotive Engineering IVK, University of Stuttgart

17:00 End of the event
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<th>Time</th>
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<tr>
<td>13:30</td>
<td>A lifecycle model to support continuous component evolution in embedded automotive systems</td>
<td>Lukas Block, Universität Stuttgart; O. Riedel, F. Herrmann, Fraunhofer IAO</td>
</tr>
<tr>
<td>14:00</td>
<td>Comparing current and future E/E-Architecture trends of commercial vehicle and passenger car</td>
<td>Tenny Benckendorff, Bosch Engineering GmbH; A. Lapp, T. Oexner, T. Thiel, Robert Bosch GmbH</td>
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<tr>
<td>13:30</td>
<td>Lightweight brake rotors with thermally sprayed ceramic coatings as friction surfaces</td>
<td>Rainer Gadow, S. Popa, A. Killinger, Universität Stuttgart</td>
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<td>14:00</td>
<td>Lightweight forging initiative III: forging technology contribution to lightweight design</td>
<td>Hans-Willi Raedt, Hirschvogel Automotive Group; T. Wurm, Georgsmarienhütte GmbH; A. Busse, fka – Forschungsgesellschaft Kraftfahrwesen mbH</td>
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<td>13:30</td>
<td>The impact of Pass-by Noise Legislation on the design of exhaust systems</td>
<td>Jan Krüger, P. Wink, Eberspächer Exhaust Technology GmbH &amp; Co. KG</td>
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<tr>
<td>14:00</td>
<td>Simulation of torsional tire vibration and its relevant vehicle chassis parameters</td>
<td>Wenrui Han, G. Prokop, IAD, TU Dresden; T. Roscher, AUDI AG</td>
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14:30 Coffee break

17:00 End of the event
EXHIBITION

On Tuesday and Wednesday, an accompanying exhibition will take place in the foyers of the event facilities. Manufacturers and suppliers to the automotive industry will present the latest developments in vehicle, engine and measurement technology.

Exhibition maps and detailed exhibitor profiles are available on site. Find out more about the exhibitors [www.stuttgarter-symposium.de](http://www.stuttgarter-symposium.de)

Exhibition opening times:
Tuesday 19 March 2019 | 8:00 – 18:00
Wednesday 20 March 2019 | 8:00 – 15:30

LIST OF EXHIBITORS AT THE 19TH STUTTGART INTERNATIONAL SYMPOSIUM

| A&D Europe GmbH | Forschungsinstitut für Kraftfahrwesen und Fahrzeugmotoren Stuttgart (FKFS) |
| AVL List GmbH | Fritz Winter Eisengießerei GmbH & Co. KG |
| Bertrandt AG | Greenteam Uni Stuttgart |
| DLR Institut für Fahrzeugkonzepte | HEAD acoustics GmbH |
| dSPACE GmbH | Kistler Instrumente GmbH |
| Elring Klinger Motortechnik GmbH | Kratzer Automation AG |
| e-mobil BW GmbH | Kristl, Seibt & Co. GmbH |
| ESI ITI GmbH | Lee Hydraulische Miniaturkomponenten GmbH |
| ETAS GmbH | MAHLE International GmbH |
| FEV GmbH | MANN+HUMMEL GmbH |
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p.sautter@emendo-events.de

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INFORMATION ABOUT THE SYMPOSIUM

EVENT LOCATION
Haus der Wirtschaft | Willy-Bleicher-Straße 19 | 70174 Stuttgart
Phone +49 711 123-0 | www.hausderwirtschaft.de

INFORMATION & CONTACT
Questions about the event
info@fkfs-symposium.de | Phone +49 711 4605376-8

ACCOMMODATION
Hotel Maritim
Reservation Code: Stuttgarter Symposium
Available until 18 February 2019
Maritim Hotel Stuttgart | Seidenstraße 34 | 70174 Stuttgart
Phone: +49 711 942-0
E-mail: info.stu@maritim.de

SERVICE ON-SITE
REGISTRATION
The registration desk is located in the foyer on the 1st floor.
Opening times:
Tuesday, 19 March 2019 | 8:00 – 19:00
Wednesday, 20 March 2019 | 7:30 – 17:30
Phone +49 711 4605376-8

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With friendly support of Daimler AG and Dr. Ing. h.c. F. Porsche AG, you may take advantage of a free shuttle service and be driven to your hotel, the airport or train station.
Please book your travel request at the information counter on the 2nd floor in front of the König-Karl-Halle.
In the morning there is a shuttle service from the Maritim Hotel to the Haus der Wirtschaft.
Please consider that only transfers in the Stuttgart area are provided.

LANGUAGE
The official symposium language is German. All presentations will be simultaneously interpreted in both directions.

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Stay on top of your working day during the Stuttgart International Symposium by making use of our business center, complete with all the essentials. The space is complete with WiFi, power connections and mobile phone charging stations.

LOUNGE
Allow yourself a break and take a seat in our lounge area. Here you can converse with clients, partners, colleagues, speakers and other symposium participants.

FEES
Symposium participation fee € 995 excl. VAT
Participants with university discount € 495 excl. VAT
Doctoral candidate € 360 excl. VAT
Day ticket € 595 excl. VAT
Day ticket with university discount € 395 excl. VAT
Day ticket doctoral candidate € 260 excl. VAT
The participation fee includes:
» Access to all events on both days and with a day ticket respectively for the day booked
» Conference documentation
» Lunch, cold drinks and coffee at break times
» Access to the formal evening reception on 19 March 2019

Students € 119 including VAT
For students of the University of Stuttgart a limited number of free tickets are available. These can be collected upon presentation of the certificate of enrollment and prior appointment from 14 January 2019 on in the institute:
Institute for Internal Combustion Engines and Automotive Engineering IVK Further information: symposium@fkfs.de

PARTICIPANTS
The Stuttgart International Symposium is aimed at the management and employees of automotive manufacturers and their suppliers working in research, development and production, as well as development service providers, software companies, associations, politicians and universities.

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Register now at www.stuttgarter-symposium.de
You can find the conditions of participation for the event online at fkfs-veranstaltungen.de/3/terms-and-conditions/

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Pfaffenwaldring 12 | 70569 Stuttgart | www.fkfs.de
Phone +49 711 685-65888 | symposium@fkfs.de
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1 Not valid for ticket category doctoral candidate/students
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