



HELMUT SCHMIDT
UNIVERSITÄT
Universität der Bundeswehr Hamburg

RESEARCH REPORT 2018



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Foreword

Dear Readers,

The new mission statement of our university defines our level of ambition as being a research campus with international visibility. Our strategic planning has set its sights on the lofty goal of applying for full membership of the Deutsche Forschungsgemeinschaft (DFG) by the year 2022. This complements our main mission, which remains to provide excellent high-intensity under- and postgraduate courses for officers and officer cadets.

Over the last couple of years, a lot has happened in the area of research at Helmut Schmidt University / University of the Federal Armed Forces Hamburg (HSU/UniBw H), and I am happy to report a marked positive trend. The number of grants by the DFG and comparable donors with competitive selection has been growing, and colleagues from HSU/UniBw H participate in two out of the four excellence clusters built up by University of Hamburg (including two PIs). A young female researcher from the Faculty of Humanities and Social Sciences (GEISO) was recently appointed a Heisenberg professorship. And the list goes on.

Let me highlight two fields in which I believe us to be at the forefront of research: fuel cells and alternative energy supply is one example, research in unmanned aerial vehicles (UAVs) is another. But as the present research report clearly shows, there are many more examples. The additional resources available through the cluster for security research and logistics (SILO) has enabled us to fund several cross-functional professorships – high performance computing and data analysis, to name just two – which complement our existing excellent capabilities across all four faculties. Many of our projects are already truly interdisciplinary. For example, the UAV group does not just work on building the vehicles and on making them fly autonomously, it also explores the legal foundation and implications of their use.

Fundamental research is key as it forms the central prerequisite for attaining the level of ambition and the goals stated above. Credibility in the scientific community is garnered through hardly anything else. On the other hand, interest in applications of work done at HSU/UniBw H is on the rise, and we must embrace the “third mission” of knowledge transfer to remain a relevant actor for the Federal Ministry of Defense (who after all, provide most of our funding) as well as for society at large.

So, we at HSU/UniBw H will also build on our fundamental research to devise, and to implement, applications. This has a long-standing tradition in our engineering faculties, a tradition that is being reinforced by the recent introduction of the SILO cluster. It is emerging

in the other fields as well, most notably through the German Institute for Defense and Strategic Studies (GIDS) – in which we have partnered up with Bundeswehr Command and Staff College (FüAkBw) – and the interdisciplinary research focus on maritime safety (iFMS).

In the age of digitization, I believe glossy brochures to be a thing of the past. But reporting on the state of research at a university is one exception. Of course, you can read about our research – as well as about all our other activities – on our website or follow us on Facebook and on Twitter (and I encourage you to do so). But it still behooves us at HSU/UniBw H to revise systematically what has been accomplished, to evaluate where our weaknesses and opportunities are, and to report on our findings. This is what the research report 2018 does. Let me thank our vice president for research, Prof. Lammering, the Senate Committee for Research and Junior Researchers as well as the team in our research office for putting all of this together.

Whom did they write this for? One target audience is internal: faculty members can take stock of what the others are doing and let this fire up their imagination. This will lead to more interdisciplinary cooperation – which will be further enhanced when our new research information system OpenHSU will debut in early 2020. There are also many external target groups, ranging from regulators and grant-giving institutions to the other research institutions in Hamburg, our alumni, and the general public. So, this is one glossy brochure that we will continue to print. (But you can also download the pdf, if you so prefer.)

Enjoy this first instalment of HSU/UniBw H's research report!



Prof. Dr. rer. pol. Klaus Beckmann
Präsident der Helmut-Schmidt-Universität /
Universität der Bundeswehr Hamburg

Foreword

Dear Readers,

With this report, the Helmut Schmidt University / University of the Federal Armed Forces Hamburg provides an insight into its numerous and diverse research projects. We, the scientists, address ourselves with the contributions contained therein to our supporting institution, the Federal Ministry of Defense, to our numerous third-party donors, to interested colleagues in other scientific institutions and last but not least to the interested public.

This report contains only a selection of our numerous research projects, and even these are only briefly presented. In this way, we want to keep the overall presentation clear and concise and still make clear the diversity of research topics in our four faculties. We will continue to publish research reports in subsequent years and will then provide you with further interesting and new insights.

2018 was a very successful year for research at Helmut Schmidt University / University of the Federal Armed Forces Hamburg. Particularly noteworthy are the two contributions at the end of this research report on the participation of scientists from our university in the two clusters of excellence "Understanding Written Artifacts - Material, Interaction and Transmission in Manuscript Cultures" and "Climate, Climatic Change, and Society" at the Universität Hamburg. This is preceded by a presentation of the research highlights of the four faculties.

This research report emphasizes further that there are also numerous collaborations between scientists at Helmut Schmidt University / University of the Federal Armed Forces Hamburg and other scientific institutions, not only in the Hamburg metropolitan region, but also nationally and internationally. These scientific institutions are not only universities but also institutes of the Leibniz Association and the Helmholtz Association. These connections have recently been strengthened and institutionalized through joint appointments.

We are pleased that our research is supported by numerous third-party donors from the public and private sector and we are very grateful for this manifold support. In particular, the number of projects funded by the Deutsche Forschungsgemeinschaft has increased considerably in recent years. The financial support for preparatory research work through our in-house and the state research funding of the Freie und Hansestadt Hamburg has supported this development very positively. We are very confident that we will be able to further advance this successful development in the coming years.

We would be very pleased to have made an interesting selection of research projects in this report and to be able to offer you a stimulating read. Please do not hesitate to contact us if you would like to further explore one or the other topic.



R. Lammering
Prof. Dr.-Ing. Rolf Lammering
Vice President / Research

Faculty of Economic and Social Sciences

Overview

The Faculty of Economics and Social Sciences at Helmut Schmidt University / University of the Federal Armed Forces Hamburg (HSU / UniBw H) is home to some 40 established researchers, and approximately an equivalent number of young researchers (post-docs) aiming at a career in academia. This 2018 edition of the HSU / UniBw H's research report showcases the research of approximately one third of the faculty, covering established as well as young researchers, as will the follow-up editions. Together, they provide a comprehensive overview of how broad a spectrum of research is carried out at the Faculty.

Much of the research bridges the boundaries of special fields, taking account of the fact that a great many of today's most pressing questions in the fields of technology, socio-economics, political economy as well as management and entrepreneurship are deeply linked and thus frequently cannot be explored in isolation. The trend towards digitization, for instance, affects nearly all aspects of life, including military issues. Much of the research of the members of the Faculty reflects this fact, both in research topics as well as in research design. The report thus follows an alphabetical order rather than a fragmentation into narrow subjects.

With a large number of projects, the Faculty is well anchored in Hamburg's science community and beyond. In 2018, as in previous years, members have been involved in consulting and the transfer of knowledge and research results into the public and the private sector, and public outreach continues to be an important element, as for instance, by participating in events such as Open Campus and the Hamburg Night of Science.

The Faculty of Economic and Social Sciences was able to win Prof. Dr. **Felix Boor**. He filled in the position of Prof. Dr. **Christian Ernst** at the Professorship of Public Law and Commercial Law, including Public Procurement Law. Since Prof. Dr. **Klaus Beckmann** has been appointed president of the HSU / UniBw H, Dr. **Fabian Paetzel** has been filling in the position of Public Economics.

News from Research

Because of their expertise and outstanding research, members of the Faculty were successful in acquiring external funding for a great many projects, covering virtually all sub-fields in the Faculty, and with funding from different sources. Projects range from questions concerning quality management in higher education (Scheytt); social contract perspectives on redistribution according to needs (Traub); various projects on gender differences in working hours, including a database (Matiaske); forecasting in times of fundamental macro-crises (Pierdzioch); professional qualifications and biographies of prime ministers in Middle and Eastern European democracies (Grotz), or finance management in the public sector (Schaefer), to highlight a few. Grants have been received from the Deutsche Forschungsgemeinschaft (DFG), the Federal Government (e.g. BMBF) as well as administrative branches and educational institutions (e.g. University of Applied Labor

Studies, HdBA), but also from industry (e.g. Airbus), and from various foundations.

Members of the Faculty are also involved in research projects funded, inter alia, by various bureaus and divisions of the Federal Ministry of Defense (Planungsamt der Bundeswehr (PlgABw), Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr (BAAINBw)), the German Foundation for Peace Research (DSF) or the Deutsche Forschungsgemeinschaft (DFG), which are especially geared towards issues of defense management, national and international conflicts. Specific projects funded include the management and project organization in the **Professorship for Sociology** (Besio), various research projects as to recruiting (Fantapié Altobelli) and personnel management (Traub) of the armed forces, and of recognition of armed non-state actors in violent conflicts (Geis). The international authors'

workshop discussed political and ethical risks and opportunities for conflict transformation through granting recognition to armed groups, including terrorist organizations.

At the **Professorship for Economics, especially Behavioral Economics**, Stefan Traub is the spokesperson of the DFG-funded research group FOR 2104 “Need-based justice and distribution procedures”. In his subproject “Need-based redistribution as a social contract”, he and his team analyze theoretically as well as by means of laboratory experiments the economic incentive effects caused by the welfare state in the context of productive investment decisions, such as human capital investments. In the current second funding phase, the focus of the subproject is on the impact of heterogeneity on risk-taking and redistribution in the welfare state. Also, the study “WISSENPersMgmtBw” supports the strategical personnel management of the Federal Ministry of Defense by means of a behavioral microsimulation approach.

Another project at the **Professorship for Political Science, especially Comparative Government**, deals with prime ministers in the parliamentary democracies of Central and Eastern Europe (CEE). This project, titled “Career Profiles and Prime Ministerial Performance in Central and Eastern European Democracies” is funded by the DFG. It seeks to explore a key question of comparative government research that has not been answered so far: in what way do career patterns of prime ministers in CEE countries

affect their political performance? To answer this question in a systematic manner, the project is subdivided into three milestones that are to be reached in corresponding work modules.

The **Professorship for Management, especially Marketing**, contributed a project called “Trend research to optimize and secure the external personnel requirements of the Federal Armed Forces” which is funded by the Ministry of Defense with a total project volume of approx. € 2,000,000 (2015-2017: € 1,200,000; 2018-2019: € 800,000). The main focus is on the perception of the Bundeswehr as an employer and the development of strategies to attract qualified military and civilian personnel. The database is obtained on the basis of both qualitative and quantitative research methods.

At the **Professorship for Political Economy and Empirical Economics** research has a special focus on migration and climate change. Research covers implications of climate change and climate-induced disasters for individuals, firms, and the insurance sector.

Research at the **Professorship for Sociology, especially Sociology of Organizations**, focuses on systems theory, scientific communication, organizations, and ethics. Current topics cover such diverse matters as temporary organizational structures in science, organizational structures in projects and innovation, but also extends to macro-perspectives, such as, for instance, organizational responses to heterogeneous



societal and moral expectations as well as issues of big data, algorithms and decision-making.

The **Professorship for Political Science, in particular International Relations and Regional Governance** is headed by Prof. Dr. Sandra Destradi, who has a joint appointment with the German Institute of Global and Area Studies (GIGA). Research projects include the rising powers in world politics and the impact of their rise on global and regional governance, the phenomenon of “reluctance” in world politics (How can we explain indecisiveness, hesitation, and “muddling-through” in international politics?), issues of populism and foreign policy (What happens when populists come to power and form governments, how does this affect foreign policy of the respective countries? What is the broader impact of the global rise of populism on world politics?). Since Prof. Dr. Sandra Destradi is on leave as of 2018, Dr. Matthew David Stephen is standing in for her in Political Science, in particular International Relations and Regional Governance. His research interests include the rise of new powers, legitimacy, international institutions, and materialist approaches to international relations.

Research at the **Professorship for Economics, in particular Industrial Economics**, includes digital economics, competition policy and applied econometrics. Current work is concerned with strategies in platform markets, competition policy in two-sided markets, the effects of media bias as well as on the effect of big data and artificial intelligence on competition policy and regulation.

At the **Professorship for Economics, especially International Economics and Economic Policy Research**, research primarily focuses on the economics and politics of international trade and international finance. Particular questions include the effects of information and communication technologies (including AI) on the globalization of production, political economy issues of international negotiations and diplomacy, international agreements and the evolution of institutions, and the relationship between domestic interests and international economic policy.

Research at the **Professorship for Business Administration and Marketing** contributes to the following fields: international marketing,

marketing research, consumer neuroscience, and personnel. Specific topics, for instance, with respect to consumer neuroscience are: the application of implicit methods in marketing research, ethical implications, and the adaptation of implicit methods in quantitative surveys. In these research areas, several publications and conference presentations have been issued in 2018. Because of the expertise in marketing, the professorship is also involved in research into personnel marketing for the Bundeswehr, with the research being funded by the German Ministry of Defense. Several subprojects cover the fields of qualified personnel recruitment and personnel commitment in the Bundeswehr. Results have been published in various outlets, research reports as well as a completed PhD Thesis, and have been presented at various conferences.

At the **Professorship for Business Administration, in particular Computer Science**, the main research topics include automated negotiations, e-coordination, planning systems for production and logistics management and metaheuristics.

The **Professorship for Environmental, Climate and Development Economics** is headed by Prof. Dr. Andreas Fuchs, who has a joint appointment with the Kiel Institute for the World Economy. Research analyzes trade, investment and development policies with quantitative methods and a special focus on China and other emerging economies. The political economy of natural disasters, humanitarian crises, and non-militarized conflicts are also investigated. A core area of research is the analysis of the allocation and the effects of China's and India's economic aid and trade finance projects in Africa and elsewhere in the developing world. This work includes subnational analyses of regional development using remote-sensing data. Other work on foreign assistance explores the impact of aid on migration flows and the effects of emergency aid after natural disasters. And, research at the professorship also covers the political economy of trade and investment, where it focuses on the role of political tensions for trade and the politico-economic analysis of sovereign ratings.

At the **Professorship for Business Administration, in particular Logistics Management**, research is dedicated to the advancement of quantitative planning and decision-making/ decision-aiding concepts with

applications in production and logistics. In this context, multi-objective approaches are frequently employed, as real-world problems often comprise several conflicting criteria. Besides the proposition of planning approaches as such, the (prototypical) implementation of the formulated ideas, leading to (actual running) decision support systems (DSS) is of further interest, e.g. with applications in (i) inventory routing/ vehicle routing, (ii) production planning and control, and (iii) timetabling and rostering.

The research focus at the **Professorship for Political Science, in particular International Security and Conflict Studies**, is on the legitimization of military interventions, democratic peace, security governance, transitional justice, German foreign policy, and recognition in international relations. In 2018, the chairholder, Prof. Dr. Anna Geis, obtained a seed grant by the HSU / UniB-wH to kick-start research on the citizen participation in foreign policy. She is also member of the DFG research group on overlapping spheres of authority and interface conflicts in the global order (OSAIC) in which she directs a sub-project on African Security Governance.

At the **Professorship for Political Science, in particular Democratic Institutions in Historical and International Comparison** (electoral systems, federalism, direct democracy, party systems and party governments) current research explores, inter alia, the performance of prime ministers in Central and Eastern European democracies, political discourses on democratic innovations in the German context, and electoral system reform in Germany.

The **Professorship for Economics, in particular Economic Growth and Business Cycles**, concentrates its research on the empirical analysis of the relationship between demographic factors and economic growth.

At the **Professorship for Management and Business Administration, especially Management Science and Operations Research**, current research focuses on airplane boarding, container logistics, and scheduling.

At the **Professorship for Political Science with a Focus on International Politics** research focuses on theories of international relations, EU neighborhood policy, Euro-Mediterranean relations, the politics of the Middle East and North Africa, and processes of transformation

and democratization with special attention to gender perspectives. Current projects are centered on the topic of migration in the Mediterranean, with four of them standing out, namely (i) exploring the underlying dynamics of human mobility with a particular focus on migrants' perspectives and by conducting field studies in Turkey and Germany; (ii) applying design thinking to foreign policy decision-making, thus allowing for simulation and testing; (iii) studying gender relations, democracy, and discourse in Euro-Mediterranean relations and within the Middle East and North Africa region, including questions such as, how to cope with Islamists if women's rights are at stake and perceptions of Islam in the EU when dealing with Arab regimes; (iv) illuminating EU external democracy promotion in Euro-Mediterranean relations and within the Middle East and North Africa region as well as shifts in EU policy goals and diverging interests of specific EU-member states.

Research at the **Professorship for Public Administration and Public Policy** currently includes the issue of how the organization and governance of social policy and public service provision alters against the background of political, social, or technological change (e.g. liberalization/marketization of service provision, internationalization, digitization).

Research at the **Professorship for Technology and Innovation Management** covers recent topics of technology and innovation management, including technology foresight, business model innovation, patent management as well as classical issues of the management of innovation networks or R&D management.





Research at the **Professorship for Personnel and Work** has a particular focus on employment relations and labor. A number of research projects are currently exploring, inter alia, various atypical forms of employment/contingent work as well as changes in labor values, including international comparisons of employment relations.

At the **Professorship for Management and Business Administration, especially International Finance**, ongoing research projects cover various aspects of international finance, such as, for instance, multinational business finance, corporate finance and valuation, investment decisions, and options and other financial derivatives.

At the **Professorship for Public Economics**, research comprises issues of social identity, social preferences, social recognition, expectations, redistribution, inequality, taxation, reforms, framing, reputation systems in online markets, cheating behavior, risk behavior and efficiency. Methodologically, the approach explicitly draws on various sub-disciplines in the social sciences, in particular psychology, political science and sociology (besides economics). This includes economic history and the philosophy of economic thinking. Furthermore, microeconomic perspectives, financial theory, institutional economics and employed empirical methods, in particular lab-experiments (but also online and quasi-field experiments) are combined.

At the **Professorship for Economics, especially Monetary Economics**, research covers a broad spectrum within the field of economics, including the economics of sports, besides macroeconomics, monetary economics, and

financial and international economics. Current research projects focus on the forecasting of business cycles and inflation as well as stock market developments and exchange rate changes. Studies specifically address issues of forecasting realized volatility in financial markets, the optimality of forecasts under flexible loss, behavioral economics and forecasting as well as the optimality of survey forecasts, and machine-learning in economics.

Research at the **Professorship for Political Science, in particular Political Theory**, has a particular focus on contemporary political theory, (deliberative) democratic theory and constitutional law, and constitutional theory. At the **Professorship for Public Administration and Management**, research is focused on management of organizations within the public sector. Current research explores public decision-making, which yields, inter alia, insights into the behavior of actors in the context of (budget) negotiation processes by means of experimental methods. Other projects are concerned with developing a maturity model of government



finance management. With her expertise in managing organizations in the public sector, the chairholder Prof. Dr. Christina Schaefer is also involved in consulting, thus bridging research and implementation in public sector management. With the aim of strengthening the link between research and consulting she initiated a formal cooperation with the University of Applied Labor Studies (HdBA) in Schwerin.

At the **Professorship for Business Administration, especially Management Accounting and Control**, current research centers around four sub-areas: (i) performance measurement and management, including matters of quantification and their organizational consequences; (ii) organizational risk management, in particular with respect to strategic and reputational risks; (iii) issues of quality management in higher education institutions; and (iv) management accounting and control in public sector organizations.

The field of expertise at the **Professorship for Theoretical and Empirical Research in International Relations** revolves around the theory-guided analysis of cooperative security. This includes: peacebuilding German foreign and security policy, security and cooperation in Europe including Russia, cooperation and conflict dynamics in East Asia with a special emphasis on China, challenges of global governance (responsibility to protect, nuclear order, arms control) and German politics towards West Africa.

At the **Professorship for Behavioral Economics**, scientific work includes experimental approaches to research in economics. The following fields are of particular interest: (i) specific behavioral aspects of individual decision-making such as loss aversion and the endowment effect, (ii) social preferences, experimental social choice theory and voting on redistribution, and (iii) willingness-to-pay for “green” consumption. The chairholder, Prof. Dr. Stefan Traub, is the spokesperson of the DFG-funded research group FOR 2104 “Need-based justice and distribution procedures”.

At the **Professorship for Quantitative Methods in Economics**, research includes categorical processes and time series, count processes and time series, compositional data (CoDa), statistical process control, computational statistics and data mining.

Selected Publications

C. Besio:

Moral und Innovation in Organisationen.
Wiesbaden: Springer VS, 2018.

C. Behrens, C. Pierdzioch, M. Risse:

A Test of the Joint Efficiency of Macroeconomic Forecasts Using Multivariate Random Forests.
Journal of Forecasting 37 (2018), 560–72.

H. Binder, B. Dluhosch, D. Horgos, S. Horgos:

Bifurcations in the Evolutionary Approach to Multilateralizing Trade Policy.
The Journal of International Trade & Economic Development 27 (5), (2018), 541-64.

J. Donaubauer, P. Nunnenkamp:

EU Investors versus EU States: International Arbitration of Investment Disputes.
Journal of Common Market Studies 56(6), (2018): 1376-93.

A. Dreher, A. Fuchs, B. Parks, A. M. Strange, M. J. Tierney:

Apples and Dragon Fruits: The Determinants of Aid and Other Forms of State Financing from China to Africa.
International Studies Quarterly 62(1), (2018): 182-94.

S. Finkler:

Demeritorisierung der Alterssicherung. Zur Rationalität individueller Altersvorsorgeentscheidungen im deutschen Rentenversicherungssystem. Ein mikroanalytisches Simulationsmodell.
Berlin, Bern, Bruxelles, New York, Oxford, Warszawa, Wien: Peter Lang, 2018 <https://doi.org/10.3726/b13092>

B. Friedländer, C. Schaefer, S. Warm:

Role and Performance of Major Public Enterprises in Germany in Terms of their Strategic Relevance and Specificity.
Annals of Public and Cooperative Economics 89(3), (2018): 543-57.

A. Geis:

The Ethics of Recognition in International Political Theory.
In: Brown, C.; & Eckersley, R. (eds.). The Oxford Handbook of International Political Theory, Oxford: Oxford University Press, (2018), 612-25.



A. Götz, F. Grotz, T. Weber:

Party Government and Administrative Reform: Evidence from the German Länder. Administration & Society 50/6 (2018), 778–811.

C. Huber, T. Scheytt:

Event Risks and Crises: Barriers to Learning. In: Gephart, R.; Miller, C.C.; & Svedberg- Nilsson, K. (Eds.). The Routledge Companion to Risk and Crisis Management. Abingdon: Routledge, 228-42, (2018).

F. Jaehn, D. Kress:

Scheduling Cooperative Gantry Cranes with Seaside and Landside Jobs. Discrete Applied Mathematics 242, (2018), 53-68.

P. Krügel, S. Traub:

Explaining Resistance to Change: Some Experimental Evidence and Implications. Journal of Economic Behavior and Organization 147, (2018), 94-114.

W. Matiaske, H. Seifert:

Funktionen der betrieblichen Mitbestimmung. Erfolgreiche Bewältigung der Finanzkrise und neue Herausforderungen. Personalführung 51 (11), (2018), 17–22.

F. Paetzel, R. Sausgruber:

Cognitive Ability and In-group Bias – An Experimental Study. Journal of Public Economics 167, (2018), 280-292.

J. Plagemann, S. Destradi:

Populism and Foreign Policy: The Case of India. Foreign Policy Analysis. Online first (2018), (<https://doi.org/10.1093/fpa/ory010>).

A. de Stange:

Crisis en Venezuela: ¿Qué Tienen en Común Venezuela y Sri Lanka? Foreign Affairs Latinoamérica (2018), (<http://revistafal.com/crisis-en-venezuela/>).

M. Staack:

Coping with Russia: past failures, future prospects, and implications for the Baltic Sea region. Danish Foreign Policy, 46, (2018).

M. D. Stephen, M. Parízek:

New Powers and the Distribution of Preferences in Global Trade Governance: From Deadlock and Drift to Fragmentation. New Political Economy, Online first, (2018), (<https://doi.org/10.1080/13563467.2018.1509065>)

C. H. Weiß:

An Introduction to Discrete-Valued Time Series. John Wiley & Sons, Inc., Chichester, 2018.

J. Znanewitz, L. Braun, D. Hensel,

C. Fantapié Altobelli, F. Hattke:
A Critical Comparison of Selected Implicit Measurement Methods. Journal of Neuroscience, Psychology, and Economics 11(4), (2018), 249-66.

In addition to publishing, members of the Faculty also serve on editorial boards of academic outlets such as, for instance, the Journal Leviathan (Geis), the Annals of the Croatian Political Science Association (Grotz), the European Journal of Operational Research, the Journal of Business Economics (Jaehn), the Annals of Public and Cooperative Economics (Grotz), the Journal for Public and Nonprofit Services, and the journal Verwaltung und Management (Schaefer), to name a few. And, they are editors or co-editors of several book series of major publishers, e.g., Sozialwissenschaftliche Forschungsmethoden/ Research Methods in Social Sciences (Fantapié Altobelli), Politics and Society in the Middle East (Jünemann), or Universität und Gesellschaft (Scheytt).

Professors and Deputy Professors

Univ.-Prof. Dr. Klaus Beckmann,
President since April 1, 2018

Univ.-Prof. Dr. Michael Berlemann,
Political Economy and Empirical Economics

Univ.-Prof.'in Dr. Christina Besio,
Sociology, especially Sociology of Organizations

Dr. Felix Boor,
Public Law and Commercial Law (including Public Procurement Law)

Univ.-Prof.'in Dr. Sigrid Boysen,
Public Law, European and Public International Law

Univ.-Prof.'in Dr. Sandra Destradi,
International Relations and Regional Governance

Univ.-Prof. Dr. Ralf Dewenter,
Economics, in particular Industrial Economics

Univ.-Prof.'in Dr. Barbara Dluhosch,
International Economics and Economic Policy Research

Univ.-Prof. Dr. Stephan Duschek,
Business Administration, in particular Organizational Theory

Univ.-Prof.'in Dr. Claudia Fantapié Altobelli,
Business Administration, in particular Marketing and Vice-President for Learning and Teaching

Univ.-Prof. Dr. Andreas Fink,
Business Administration, in particular Business Informatics

Univ.-Prof. Dr. Gabriel Frahm,
Applied Stochastics and Risk Management

Univ.-Prof. Dr. Andreas Fuchs,
Environmental, Climate and Development Economics

Univ.-Prof. Dr. Martin Josef Geiger,
Business Administration, in particular Logistics Management

Univ.-Prof.'in Dr. Anna Geis,
International Security and Conflict Studies

Univ.-Prof. Dr. Jan Gertheiss,
Statistics & Data Science

Univ.-Prof. Dr. Markus Göbel,
Corporate Governance and Corporate Theories

Univ.-Prof. Dr. Florian Grotz,
Comparative Government



Univ.-Prof. Dr. Hans Hanau,
*Civil Law, Commercial, Economic and
Labour Law*

Univ.-Prof. Dr. Dierk Herzer,
*Economics, especially Economics and
Growth*

Univ.-Prof. Dr. Ulrich Hufeld,
Public Law and Tax Law

Univ.-Prof. Dr. Florian Jaehn,
*Business Administration, in particular
Management Science and Operations
Research*

Univ.-Prof.'in Dr. Annette Jünemann,
*Political Science with a Focus on
International Politics*

Univ.-Prof. Dr. Bert Kaminski,
*Business Administration, in particular
Business Taxation*

Univ.-Prof.'in Dr. Tanja Klenk,
Public Administration and Public Policy

Univ.-Prof. Dr. Sven Knoth,
Computational Statistics

Univ.-Prof. Dr. Hans Koller,
*Business Administration, in Particular
Technology and Innovation Management*

Univ.-Prof. Dr. Roland Lhotta,
*Political Science, especially the Political
System of the Federal Republic of Germany*

Univ.-Prof. Dr. Wenzel Matiaske,
Personnel and Work

Univ.-Prof.'in Dr.
Matija Denise Mayer-Friedrich,
*General Business Administration and
International Finance*

Univ.-Prof. Dr. Dirk Meyer,
*Economics, especially Regulatory
Economics*

Univ.-Prof. Dr. Stefan Müller,
*Business Administration, in particular
Accounting and Auditing*

Univ.-Prof. Dr. Christian Pierdzioch,
*Economics, in particular Monetary
Economics*

Univ.-Prof. Dr. Günter Reiner,
Business and Tax Law

Prof. Dr. Gary S. Schaal,
*Political Science, in particular Political
Theory*

Univ.-Prof.'in Dr. Christina Schaefer,
*Administrative Science, in particular
Management of Public Organizations*

Univ.-Prof. Dr. Tobias Scheytt,
Management Accounting and Control

Univ.-Prof.'in Dr. Margarete Schuler-Harms,
*Public Law especially Public Business Law
and Environmental Law*

Univ.-Prof. Dr. Michael Staack,
*Theoretical and Empirical Research in
International Relations*

Univ.-Prof. Dr. Stefan Traub,
Economics, especially Behavioral Economics

Univ.-Prof. Dr. Christian H. Weiß,
Quantitative Methods in Economics

Cooperation and International News

A number of workshops and conferences were hosted at the HSU / UniBw H, e.g., on the (non-) recognition of armed non-state actors, and with a specific focus on risks and opportunities for conflict transformation, on forced migration, on migration policy, or, together with the Kiel Institute for the World Economy, on development and environmental economics, to name a few.

Members of the Faculty were also involved in conference organization and scientific committees, for instance, within the DFG project "Career patterns and political performance of prime ministers in Central and Eastern European democracies" (Lüneburg, Germany, with eleven experts on the issue participating from CEE countries) or in the scientific program of the conference on international economics of the Spanish Association of International Economics and Finance (AEEFI), which in 2018 took place in Vila Real.

At the individual level, research projects continue to involve a number of cooperation partners. They range from research cooperation with individuals at various universities and institutes in Germany and abroad (e.g., Aarhus,

Hamburg Media School, Universities of Hamburg, Konstanz, Zürich, Vienna, Innsbruck and Tilburg, Kiel Institute for the World Economics, Observatoire de la Finance, International Centre of Research and Information on the Public, Social and Cooperative Economy) to more institutionalized networking via the QUAD project (joint research of Ecole des Mines de Paris, University of Bielefeld, Helmut-Schmidt-Universität Hamburg, Leiden University, London School of Economics) and they also comprise workshops with the German Institute of Global and Area Studies (GIGA), the Institute for Peace Research and Security Policy (IFSH), and the Hamburg Institute for Social Research (HIS), inter alia.

In 2018, members of the Faculty served on evaluation committees for research funding and international exchange programs (e.g., DFG, Fritz Thyssen Foundation, Fonds de la Recherche Scientifique FRS-FNRS, Ph.D. funding of the German Academic Scholarship Foundation, DAAD, Carlo Schmid Program), and on Ph.D. committees at foreign universities, as well as appointment and search committees for chairs and professorships at various universities.

Outlook

In the coming years, the Faculty of Economic and Social Sciences is going to further enhance greater visibility of the conducted research by promoting outstanding publications and projects. The members of the Faculty will continue to successfully acquire external funding as well as contribute to transferring knowledge and research results into the public and private sector.



Faculty of Electrical Engineering

Overview

The Faculty of Electrical Engineering is divided into 13 professorships covering the full spectrum of electrical engineering both in teaching and in research. It is responsible for the Bachelor degree programs "Electrical Engineering" and "Engineering Science" and the master degree programs "Electrical Engineering", "Renewable Energy and Smart Grids", "Information Technology", "Computer Science and Engineering", and "Engineering Science - Defense Systems". The Faculty supports the junior scientific staff and its research activities by providing the opportunities for doctorate and post-doctorate qualifications. In research, the Faculty of Electrical Engineering provides a broad selection of independent research and development projects, which guarantee an education on par with modern standards and expectations. All the results are published in scientific publications and books as well as presented at international scientific forums and conventions.

The Faculty of Electrical Engineering has successfully recruited Professor Dr.-Ing. Christian Kreischer for the professorship in Electrical Machines and Drives, following Prof. Bolte who retired in 2017. Professor Kreischer received his PhD from Technical University Dortmund. His research interests are in the dynamic behavior and the electromechanical design of highly-utilized electrical machines as well as monitoring and diagnosis. Fields of research are electrical power supply (turbogenerators, wind energy), electromobility (range prediction, optimization) and special drive technology (high-temperature applications, superconductive windings).

The Faculty of Electrical Engineering has successfully filled the newly established professorship for Laser Technology with Professor Dr. Oleg Pronin. Professor Pronin comes to the HSU/ UniBw H from the Max Planck Institute for Quantum Optics, where he has worked very successfully on the development of laser systems for the mid-infrared spectral range. In addition to this topic, he will expand his research area at the HSU/ UniBw H to include microscopy (nanoscopy) and infrared spectroscopy.

News from Research

In the recently opened hydrogen and fuel cell laboratory for the **Professorship for Electrical Power Systems**, scientists are searching for solutions for efficient and cost-effective hybrid technologies. With the development of electrically controllable membrane units in small fuel cells, scientists want to extend the service life of this future technology in the long term - at significantly reduced costs. They also work towards minimizing previously high efficiency losses by internally transferring the methanation of renewable energies into the gas outlet channel of an electrolysis cell. The Federal Ministry for Economic Affairs and Energy (BMWi) promotes this direction with funding of 2.2 million Euros until 2021.

The **Professorship for Signal Processing and Communications** has successfully developed a novel digital radio-frequency microphone. The system is built using a Field Programmable Gate Array (FPGA), a mixed-signal circuit and a small analogue circuit. Owing to the internal

modulation technique, the circuit is operated on a higher frequency band, which drastically reduces the circuit's inherent impedance. This leads to superior performance in e.g. humid environments. The approach combines the well-known radio-frequency operating principle with a coherent digital demodulation to circumvent any electrical low-frequency noise in the recorded signal. Moreover, a novel all-digital gain ranging approach has been suggested to improve the microphone's dynamic range. A German patent application has been filed.

The **Professorship for Signal Processing and Communications** has successfully closed a 4-year research period with a European patent application for claiming the rights over the next generation of control algorithms for active noise canceling headphones. The new algorithms make use of the combination strategies from the hybrid control and pseudo-cascaded systems. The result is a group of five new noise canceling algorithms that can achieve

higher noise attenuation levels and provide a higher flexibility degree for shaping the frequency content of the residual noise. Not last in importance, the advantages are achieved without requiring a higher number of microphones or loudspeakers as the ones already used by the commercial active noise canceling headphones. (European patent application filed under Application No. EP 18 18 0974).

IO-Link is the first globally standardized technology (IEC 61131-9) for communication with sensors and actuators on the factory floor below the fieldbus level and thus plays a significant role in the Industry 4.0/IoT environment. Since the very beginning the team of the **Professorship for Electrical Measurement Engineering** has been in the core team for standardization of the “IO-Link Wireless System Extensions”, which were issued in March 2018. The research activities were accompanied by several PhD theses and resulted in three patents. One is the core patent of the new wireless standard and two additional patents have been transferred in 2018 to the industrial project partner. The new technology was demonstrated at the Hannover Trade Fair on the PNO (Profibus Nutzerorganisation/

Profibus user organization) booth and an international workshop on wireless sensor/actuator communication on the factory floor was organized.

Within the BMBF flagship project SENDATE (Secure Networking for a Data Center Cloud in Europe) European partners from industry and academia are working on technologies for secure networks for the internet of the future. The **Radio Frequency Engineering** group is developing novel self-learning heterodyne receivers for continuous variable quantum key distribution systems. Laser phase noise limits the reach in coherent quantum communications. We experimentally investigate the usefulness of Bayesian inference methods to reduce the impact. An excess noise improvement of 15% is shown, resulting in improved reach and key rate. The results were presented at the Optical Fiber Conference, <https://doi.org/10.1364/OFC.2018.W2A.64>, San Diego, USA.

The **Professorship for Electronics** works on simulation and modeling of electronic systems. In the past years, research has been focused mainly on organic devices such as field effect transistors, light emitting diodes, and non-volatile memory devices. In particular, the



delicate influence of different materials on charge carrier injection mechanism and charge storage behavior was investigated. Another field of research is the investigation of electrical parameters of complex mechanical structures. In cooperation with the Professorship of Mechanics and the Institute of Polymer and Composites at Hamburg University of Technology, a project, supported by the Landesforschungsförderung Hamburg, was successfully completed. This project, which investigated the utilization of electrical measurements for the detection of mechanical damages in carbon fiber structures, paved the road for a follow-up project supported by Deutsche Forschungsgemeinschaft, which started in 2018.

In a joint effort with the group of T. Laarmann from Deutsches Elektronen Synchrotron (DESY), Hamburg, the group of **Experimental Physics and Material Science** has developed a reconfigurable optical beam splitter made by ultra-precise dicing of single-crystalline

silicon. This allowed for phase control of extreme-ultraviolet pulses from a free-electron laser (FEL) on the attosecond timescale in a Michelson-type all-reflective interferometric auto-correlator. By varying the relative phase of the generated pulse replicas with sub-cycle precision, light-wave oscillation with a period of only 129 as has been observed. Based on these results that were published in Nature Communications (DOI: 10.1038/ncomms15626) the team has successfully obtained DFG funding for a 3-year-period from 2018-2021.

Selected Publications

M. Dudzinski, M. Rozgic, M. Stiemer:
oFEM: An object-oriented finite element package for Matlab.
Applied Mathematics and Computation 334, 117 (2018),
doi: <https://doi.org/10.106/j.amc.2017.11.042>



F. Eichas, U. Zölzer:

Gray-box modeling of guitar amplifiers
Journal of the Audio Engineering Society
66(12), 1006 (2018),
doi: <https://doi.org/10.17743/jaes.2018.0052>

**C. Eigner, M. Santandera, L. Padberg,
M. F. Volk, C. E. Rüter, H. Hermann, D. Kip,
C. Silberhorn:**

*Periodically poled ridge waveguides in KTP
for second harmonic generation in the UV
regime.*
Optics Express 26, 28827 (2018),
doi: <https://doi.org/10.1364/OE.26.028827>

S. Kleis, C. G. Schäffer:

*Improving the secret key rate of coherent
quantum key distribution with Bayesian
interference.*

Journal of Lightwave Technology 37(3),
722 (2018), doi: <https://doi.org/10.1109/JLT.2018.2877823>

**M. Dietmannsberger, X. Wang, F. Blaabjerg,
D. Schulz:**

*Restoration of low-voltage distribution
systems with inverter-interfaced DG units.*
IEEE Transactions on Industry Applications
54(5), 5377 (2018), doi: <https://doi.org/10.1109/TIA.2017.2770103>

**K. Fritsch, M. Poetzlberger, V. Pervak, J.
Brons, O. Pronin:**

*All solid-state multipass spectral broadening
to sub-20 fs.*
Optics Letters 43(19), 4643 (2018), doi:
<https://doi.org/10.1364/OL.43.004643>



Quelle: Lufthansa Technik AG

Professors

Univ.-Prof. Dr.-Ing. Stefan Dickmann,
Fundamentals of Electrical Engineering

Univ.-Prof. Dr.-Ing. Holger Göbel,
Electronics

Univ.-Prof. Dr.-Ing. Klaus Hoffmann,
Power Electronics

Univ.-Prof. Dr.-Ing. Joachim Horn,
Control Engineering

Univ.-Prof. Dr. rer. nat. habil. Detlef Kip,
Experimental Physics and Materials Science

Univ.-Prof. Dr. phil. nat. habil. Bernd Klauer,
Computer Engineering

Univ.-Prof. Dr.-Ing. Christian Kreischer,
Electrical Machines and Drive Systems

Univ.-Prof. Dr. Oleg Pronin,
Laser Technology

Univ.-Prof. Dr.-Ing. C. G. Schäffer,
Radio-Frequency Engineering

Univ.-Prof. Dr.-Ing. habil. Detlef Schulz,
Electrical Power Systems

Univ.-Prof. Dr.-Ing. Gerd Scholl,
Electrical Measurement Engineering

Univ.-Prof. Dr. rer. nat. habil. Marcus Stiemer,
Theory of Electrical Engineering and
Computational Electromagnetics

Univ.-Prof. Dr.-Ing. habil. Udo Zölzer,
Signal Processing and Communication

National and International Collaborations

KUNBUS GmbH, Denkendorf, Germany, and the HSU / UniBw H, Professorship for Electrical Measurement Engineering signed a long-term cooperation agreement. KUNBUS GmbH, specialized in industrial communication technologies, acquired former staff members, IP and technology demonstrators to build their own products based on the **new standard IO-Link Wireless**.

The Professorship for Theory of Electrical Engineering and Computational Electromagnetics has established an **ERASMUS cooperation** with

the Universidade de Coimbra, Portugal (Prof. Tony Richard de Oliveira de Almeida) for the analysis of the aging of EMC-relevant components, including a regular exchange of lecturers and students.

The Professorship for Theoretical Electrical Engineering and Computational Electromagnetics started close collaborations with the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, the Bundeswehr Institute of Radiobiology (InstRadBw) in Munich and the Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS), Munster. Topics include effects of electromagnetic fields on biological systems, recurrence and protection of critical infrastructure, analysis and development of new measuring methods in EMC by means of electric mode swirling chambers as well as antenna metrology.

Conferences and Workshops

1st international IO-Link Wireless Workshop, June 27-28, 2018, with more than 120 participants for researchers and companies specialized in industrial automation/communication; organized at HSU / UniBw H by the Professorship for Electrical Measurement Engineering.

Workshop on **“Modellierung photonischer Komponenten und Systeme”**, February 22-23, 2018, with more than 40 participants organized by the Professorship for Radio-Frequency Engineering.

Workshop **“Nonlinear Fourier Transformation”**, August 28, 2018, organized by the Professorship for Radio-Frequency Engineering.

Fellowships and Awards

The **DAAD grant** for Mrs. Munira Halimjanova from Dushanbe / Tajikistan for her doctoral scholarship at the professorship of Prof. Dr.-Ing. Detlef Schulz, was extended after successful evaluation.

Mrs. Narjes Jalali, former civilian student of the HSU / UniBw H in the master program “Informatics Engineering”, got a doctoral scholarship from **Pro Excellence** for a period of 35 months. Her PhD project is supervised by Prof. Dr. Marcus Stiemer.



Assoc. Prof. Dr. Sébastien Lalléchère, Université Clermont Auvergne, received a grant from the **DAAD funding** program “Research Stays for University Academics and Scientists, 2018” for a one-month research stay at HSU / UniBw H in October 2018.

Dr. Lars Fichte again chaired the committee meeting and scientific debate of the National Commission K (Electromagnetics in Biology and Medicine) of the Union Radio-Scientifique International (URSI) at the National Annual Meeting in Miltenberg.

Outlook

While the newly established research group “Laser Technology and Spectroscopy” with strong synergetic links to “Experimental Physics and Material Sciences” is successfully growing, the Faculty of Electrical Engineering will further extend its focus on photonics as a key area of research. An important step will be the imminent reoccupation of the chair of “Radio-Frequency Engineering and Photonics”. In addition to trend-setting research, this institute is of major importance for academic training at the faculty.

Further profiling is aimed at via the newly established chair for data engineering, whose research activities will be related to large-scale data analytics with a high potential of collaboration with various research facilities in all faculties of Helmut Schmidt University, such as all logistics related institutes or, e.g., the chairs of “Electrical Measurement Engineering” or “Automation Technology”, as well as outside Helmut Schmidt University, such as the TUHH or Fraunhofer institutes.

Finally, the group of “Electrical Power Systems” is currently developing a scientific base for technical climate protection. This broad well-interconnected approach comprises coupling of different energy sectors (i.e. electricity and gas), new technologies for supply networks, and climate protecting on-board networks.

The intended forward-looking transformations of the Faculty of Electrical Engineering must be accompanied by an extensive infrastructural renewal. First results of such developments become visible on the newly established climate and innovation campus.



Faculty of Humanities and Social Sciences

Overview

The Faculty of Humanities and Social Sciences at the Helmut Schmidt University / University of the Federal Armed Forces Hamburg conducts research on a wide range of issues, including history, psychology, and human education. This basic and application-oriented research is increasingly funded by third parties. Students are involved in research projects wherever possible and thus introduced to a scientific habitus.

The Faculty's research sponsors include the DFG, the Federal Ministry of Education and Research, the Thyssen Foundation, and other, smaller organizations. The individual professorships cooperate with research institutes in Hamburg, in all of Germany, and in the global context. Through innovative research many professorships succeed again and again in attracting attention in the scientific community.

News from Research

The **Professorship for Experimental Psychology** contributed the project "Maintenance and shifting of task-specific sets of stimulus selection in neurologically normal persons and ADHD patients to the DFG Priority Program SPP1772 'Multitasking'" (2015-2018). Also in 2018, the DFG Cluster of Excellence "Understanding Written Artifacts", which is scheduled to begin in January 2019, has been approved, with a contribution from the professorship.

The **Professorship for Educational Science, especially Social, Political and Legal Foundations of Education and Upbringing**, achieved significant progress in two research domains: one is the ongoing *economization and rationalization in the educational field*, the other one is the expanding *digitization of educational governance*. The latter includes a DFG-funded project (2017–2020) on new data infrastructures and flows in German and US state school agencies. In 2018, the research domain was further enhanced with a BMBF (Federal Ministry of Education and Research) project grant, which supports a joint study on the construction of schools in times of increasing datafication. In addition, the research activities on economization have resulted in three conferences and have led to several publications such as "*Economization of School?*" which has been published in our own book series "*New Political Economy of Education*".

A central topic at the **Professorship for Labor, Human Resources and Organization** is the question, how Human Resource Management (HRM) affects individual and organizational

outcomes. A special focus is placed on the relation between different HRM strategies and the well-being of employees (e.g. job satisfaction, health). The respective research is advanced in a research consortium on "Labor Standards for Improved Well-being", where researchers from different fields aim to investigate how work and employment conditions change and how this affects employee well-being. Further projects address the influence of national institutions and culture as well as the of role necessary conditions (in the sense of critical factors, bottlenecks or possible barriers to achieving an outcome) in the field of HRM.

In November 2018, the **Professorship for Modern History (Western Europe)** organized an international conference on "Helmut Schmidt and International Politics". The proceedings brought together historians, political scientists and journalists. Topics under discussion were as diverse as Schmidt's specific brand of 'Ostpolitik', his policies towards China or the United States, the role of NATO at the end of the Cold War, and the position of West Germany toward France, Britain and Europe in general. The proceedings of the conference will be published by Schöningh (Paderborn) in the course of 2020.

The **Professorship for Work, Organizational and Economic Psychology** developed new methods to train mindfulness-based resources at the workplace. An intervention study investigated the effects of this new MBI on physiological (HR and HRV) and psychological criteria. Moreover, it was examined whether effectiveness depends on participants' personality (neuroticism, openness and conscientiousness) and

on perceived social norms towards MBIs. The results are published in the Journal of Occupational Health Psychology (JOHP). A series of experimental studies was conducted with international partners to examine the validity of follower perceptions of abusive leadership. The findings have been recently published. Ongoing large-scale research projects with funding examine a) non-responder effects in occupational health programs, b) consistent and inconsistent patterns of health-oriented leadership and the meaning of morale and welfare during deployment.

At the **Professorship for Historical Educational Research**, a new focus on historical socialization research has been established. Historical socialization research has been theoretically and methodically re-conceptualized and empirically proved in three extensive monographs until today: M. Dehnavi, 'Das politisierte Geschlecht' (2012); A. Wienhaus, 'Bildungswege zu "68"' (2014); C. Groppe, 'Im deutschen Kaiserreich' (2018). Currently, two research projects in historical socialization are pursued: First, a collective biography of all Prussian reformers and their opponents, second, the transformation of the humanities into social sciences in the 1960s and 1970s and the accompanying socialization processes of scientists and students.

The **Professorship for Personality Psychology and Psychological Assessment** developed new methods for measuring musical preferences from playback statistics: For years, the measurement of musical preferences relied on self-reports and knowledge of musical genres. However, self-reports are often biased and not necessarily reflect the listening behavior of the participant. A research project from the professorship now developed a new and ecologically valid method to measure musical preferences from music playback statistics. The user first provides access to their listening history – with the seamless integration of the Spotify service this is just one mouse click. The songs are then analyzed for their musical properties using an audio analysis software. With the results of the research, these features can be used to calculate the preference for the musical dimensions arousal, valence, and depth, reflecting the musical dimensions which have been found in previous research.

Selected Publications

F. Berding, A. Slopinski, R. Gebhardt, S. Heubischl, F. Kalmutzke, T. Schröder, K. Rebmann, T. Schlömer:

Innovationskompetenz für nachhaltiges Wirtschaften und Instrumente ihrer Erfassung.

Zeitschrift für Berufs- und Wirtschaftspädagogik, 114(1), (2018), 47-84.

K. Büchter:

Berufsschulen in der Dualen Ausbildung und Regionalen Wirtschaft. Friedrich-Ebert-Stiftung, Wirtschafts- und Sozialpolitik.

WISO-Diskurs 5. Bonn zugleich: Hans-Böckler-Stiftung. Reihe Forschungsförderung. Working Paper Nr. 59. Düsseldorf, 2018.

K. R. Fricke, D. M. Greenberg, P. J. Rentfrow, P. Y., Herzberg:

Computer-based music feature analysis mirrors human perception and can be used to measure individual music preference.

Journal of Research in Personality, 75, (2018), 94-102, <https://doi:10.1016/j.jrp.2018.06.004>

M. Gomolla, E. Kollender, M. Menk (eds.):

Rassismus und Rechtsextremismus in Deutschland. Figurationen und Interventionen in Gesellschaft und staatlichen Institutionen.

Weinheim: Beltz Juventa, (2018).

C. Groppe:

Im deutschen Kaiserreich. Eine Bildungsgeschichte des Bürgertums 1871–1918.

Böhlau/Vandenhoeck & Ruprecht, Wien, Köln, Weimar, (2018)

S. Hartong, B. Hermstein, T. Höhne (eds.):

Ökonomisierung von Schule?

Bildungsreformen in nationaler und internationaler Perspektive.

Weinheim/Basel, Beltz Juventa-Verlag, (2018).

S. Hauff, D. Alewell, N. K. Hansen:

Further Exploring the Links between High Performance Work Practices and Firm Performance. A Multiple-mediation Model in the German Context.

German Journal of Human Resource Management, 32(1), (2018), 5-26.

M. Heßler:

„If you can't beat ,em, join ,em“.
Computerschach und der Wandel der Mensch-Maschinen-Verhältnisse.
in: F. Bösch (ed.), *Wege in die digitale Gesellschaft. Computernutzung in der Bundesrepublik 1955-1990*, Reihe Geschichte der Gegenwart, Göttingen, Bd. 20, (2018), 298-321.

S. Hofbauer:

Die diskursive Konstruktion des „Lehrerwissens“ zwischen Disziplin und Profession. Eine vergleichende Diskursanalyse.
Bad Heilbrunn: Klinkhardt (2018).

T. Hoppe:

Erinnerung und Versöhnung vor dem Hintergrund belasteter Vergangenheit.
in: *Theologisch-Praktische Quartalsschrift* 166, (4), (2018), 356-365.

U. Kelle:

„Mixed Methods“ in der Evaluationsforschung – mit den Möglichkeiten und Beschränkungen quantitativer und qualitativer Methoden arbeiten.
In: *Zeitschrift für Evaluation*, 17 (1), (2018), pp. 25 – 52.

J. Kerner auch Koerner, N. Gust,

F. Petermann:

Developing ADHD in preschool: Testing the dual pathway model of temperament.
Applied Neuropsychology: Child, 7, (2018), 366-373. [https://doi: 10.1080/21622965.2017.1347509](https://doi.org/10.1080/21622965.2017.1347509)

L. Knappert, A. Kornau, M. Figengül:

Refugees' exclusion at work and the intersection with gender: Insights from the Turkish-Syrian border.
Journal of Vocational Behavior, 105, (2018), 62-82. <https://doi.org/10.1016/j.jvb.2017.11.002>

K. Liebsch:

Materialität, Interaktion und der Umgang mit der Lücke. Von der Theorie der Assemblage zu einer Methode der Erforschung psycho-sozial-kultureller Gefüge.
In: Lohl, J./Schweder, P./Augello, E. (eds.): *Widerstand und Fürsorge. Beiträge zum Thema Psychoanalyse und Gesellschaft.* Göttingen: Vandenhoeck& Ruprecht, pp. 217-232, (2018).

A.-M. Nohl:

Zur intentionalen Struktur des Erziehens – eine praxeologische Perspektive.
Zeitschrift für Pädagogik 63(1) (2018), pp. 121-138

M. M. Payk:

Frieden durch Recht? Der Aufstieg des modernen Völkerrechts und der Friedensschluss nach dem Ersten Weltkrieg. Berlin/Boston: de Gruyter/Oldenbourg, (2018).

O. Sanders:

Deleuze/Guattari.

In: Paul Smeyers u.a. (Hg.): International Handbook of Philosophy of Education. Part I. Dordrecht: Springer, pp. 103–114, (2018)

S. Schmidt-Lauff, F. Semrau, R. Egetenmeyer:

Academic professionalization and transnationalization: Comparative Studies in Adult and Lifelong Learning (COMPALL).

In: Francois, E.J. (eds.): Transnational Perspective on Teaching and Learning Technology. Hamburg, (2018), pp. 141-154. https://doi.org/10.1163/9789004366077_007

B. M. Schumpe, J. J. Bélanger, M. Dugas, H.-P. Erb, A. W. Kruglanski:

Counterfinality: On the increased perceived instrumentality of means to a goal. Frontiers in Psychology, 9, (2018): 1052. <https://doi.org/10.3389/psyg.2018.01052>.

B. Schyns, J. Felfe, J. Schilling:

Is it me or you? – How reactions to abusive supervision are shaped by leader behavior and follower perceptions. Frontiers in Psychology, 9, (2018), 1309, <https://doi.org/10.3389/fpsyg.2018.01309>

S. Selzer:

Menschen - Märkte - Meere: Bausteine zur spätmittelalterlichen Wirtschafts- und Sozialgeschichte zwischen Hamburg, Lübeck und Reval Contributions: Mittelalterforschung an der Helmut-Schmidt-Universität 6, Münster, (2018).

M. Wendt, A. Luna-Rodriguez, T. Jacobsen:

Shifting the set of stimulus selection when switching between tasks. Psychological Research, 82(1), (2018), 134-145, <https://doi.org/10.1007/s00426-017-0890-6>

Professors and Deputy Professors

Univ.-Prof.'in Dr. Christiane Bender,
General Sociology

Univ.-Prof.'in Dr. Esther Berner,
Educational Science, especially History of Ideas and Discourse in Education and Upbringing

Univ.-Prof.'in Dr. Karin Büchter,
Vocational and Company Pedagogy

Univ.-Prof.'in Dr. Monika Daseking,
Educational Psychology

Univ.-Prof. Dr. Hans-Peter Erb,
Social Psychology

Univ.-Prof. Dr. Jörg Felfe,
Work, Organizational and Economic Psychology

Univ.-Prof.'in Dr. Mechtild Gomolla,
Educational Science, especially Intercultural and Comparative Educational Research

Univ.-Prof.'in Dr. Carola Groppe,
Educational Science, especially Historical Education Research

Pivatdozent1) Dr. Sigrid Hartong,
Educational Science, especially Social, Political and Legal Foundations of Education and Upbringing

Univ.-Prof. Dr. Sven Hauff,
Labour, Human Ressources and Organization

Univ.-Prof. Dr. Philipp Y. Herzberg,
Personality Psychology and Psychological Diagnostics

Univ.-Prof.'in Dr. Martina Heßler,
Modern Social, Economic and Technical History

Univ.-Prof. Dr. Thomas Höhne,
Educational Science, especially Social, Political and Legal Foundations of Education and Upbringing

Univ.-Prof. Dr. Thomas Hoppe,
Catholic Theology with Special Consideration of the Social Sciences and Social Ethics

Univ.-Prof. Dr. Thomas Jacobsen,
Experimental and Biological Psychology

Privatdozent¹⁾ Dr. Michael Jonas,
Modern History with Consideration of
Western European History

Univ.-Prof. Dr. Udo Kelle,
Methods of Empirical Social Research
and Statistics

Univ.-Prof.'in Dr. Katharina Liebsch,
Sociology with Special Emphasis on
Microsociology

Privatdozent¹⁾ Dr. Rudolf A. Mark
(Deputy Professor),
19th and 20th Century History with
Special Consideration of Central and
Eastern Europe

Privatdozent¹⁾ Dr. Mark May,
Spatial and Environmental Cognition

Univ.-Prof. Dr. Burkhard Meißner,
Ancient History

Univ.-Prof.'in Dr. Yvonne Nestoriuc,
Clinical Psychology

Univ.-Prof. Dr. Arnd-Michael Nohl,
Educational Science, especially Systematic
Education

Univ.-Prof.'in Dr. Jutta Nowosadtko,
Early Modern History with Special
Consideration of Social and Economic
History

Univ.-Prof. Dr. Marcus Payk,
Modern History with Special
Consideration of Western Europe

Univ.-Prof. Dr. Olaf Sanders,
Educational Science, especially Educational
Theory and Philosophical Foundations

Privatdozent¹⁾ Dr. Martin Scherm,
Management Support Division

Univ.-Prof. Dr. Tobias Schlömer,
Vocational and Occupational Education

Univ.-Prof.'in Dr. Sabine Schmidt-Lauff,
Continuing Education and Lifelong Learning

Univ.-Prof. Dr. Stephan Selzer,
Medieval History

Univ.-Prof.'in Dr. Barbara Sieben,
Personnel Policy

Univ.-Prof. Dr. Ewald Stübinger,
Protestant Theology with Special
Consideration of Social Ethics and the
History of Theology

Univ.-Prof.'in Dr. Christine Zeuner,
Adult Education

¹⁾ Privatdozent: university scholar who has a
habilitation and is allowed to supervise PhD
students, but is not (yet) a full professor.

Cooperation and International News

A **research and teaching network on history of education** was established in 2018 by four female professors of Helmut Schmidt University (E. Berner, C. Groppe) and University of Hamburg (I. Lohmann, S. Kesper-Biermann). It cooperates in university seminars (joint courses) and joint seminars for PhD students, and it acts internationally as a research network, for example with joint conference presentations (see International Standing Conference for the History of Education, Berlin 2018).

The Professorship for Experimental Psychology maintains an **international collaborative research network**. Starting in 1996, the International Picture Naming Project joins researchers from many countries spanning the globe, including the USA, Mexico, Italy, Germany, Taiwan and others. It is hosted by the University of California, San Diego's Center for Research and Language. Starting this year, the Cluster of Excellence 'Understanding Written Artefacts' at the University of Hamburg assumes a global perspective in the investigation of the cultural practice of writing, starting with its material object.

The Professorship for Educational Science, especially Social, Political and Legal Foundations of Education and Upbringing has successfully **initiated or further intensified international cooperation and exchanges** with Dr. N. Piattoeva (Tampere University), Dr. G. Savage (University of Western Australia), Dr. S. Sellar (Manchester Metropolitan University) and Dr. M. Decuyper (KU Leuven). In addition, there is a cooperation agreement with the *Georg Eckert Institute for International Textbook Research* (GEI) on common studies in the field of educational media. In 2018 the **collaboration agreement between**

the Berlin Social Science Center and the Faculty for Humanities and Social Science at Helmut Schmidt University (WZB – HSU /UniBwH) was inaugurated by the foundation of a new professorship on “International Work Relations”. The new member of the Faculty shall intensify research in the field of “Globalization, Work and Production” focused on the company and industry levels following a cross-country comparative design - with Europe and the Emerging Economies (BRIC Countries) being the main research fields.

The Professorship for Continuing Education and Lifelong Learning has founded an international network to promote research-based learning and established the **ERASMUS+ KA2** cooperation for innovation and the exchange of good practices *INTALL International and Comparative Studies for Students and Practitioners in Adult Education and Lifelong Learning*, including partners from Würzburg (Germany), Pecs (Hungary), Dublin (Ireland), Padova and Florence (Italy), Lisbon (Portugal), Ljubljana (Slovenia) and Brussels (Belgium).

As a member of the scientific research network on “Evaluating Cultural Archetypes in Cross-Cultural Research: A Cultural Intelligence and Human Resource Management Perspective”, S. Hauff co-organized two **international workshops**. The first workshop on “The concept of cultural archetypes – A way of measuring culture and improving our understanding of cultural differences?” took place at the University of North Carolina at Greensboro, USA (August 15 - 17, 2018). The second workshop on “Intercultural Competences” took place at the University of Southern Denmark (November 01 - 02, 2018). Both workshops were attended by highly renowned researchers like S. Venaik (The University of Queensland, Australia), G. Stahl (Vienna University of Economics and Business, Austria), and L. van Dyne (Michigan State University, USA).

At the Professorship for Educational Science, especially Intercultural and Comparative Educational Research, the second part of the evaluation project “Quality development of schools within migration society: **Evaluation of the further teacher training program for Intercultural Coordination**”, in collaboration with the Hamburg Institute for Teacher Education and School Development (LI) at the Federal Ministry of Education and the Coordination Centre for Continuing Education and Employment,

has been completed successfully in October 2018. The collaboration encompassed the scientific supervision and evaluation of two biennial training seminars in Hamburg to educate teachers as agents of change in intercultural and anti-discriminatory school development processes. Main results of this project are documented in two research papers (Gomolla, M., Schwendowius, D., Kollender, E., 2016; Gomolla, M., Langheinrich, S., Bello, B. 2019).

In his role as ambassador for Necessary Condition Analysis (NCA), S. Hauff closely works together with the NCA founder Prof. Dul (Rotterdam School of Management, Erasmus University Rotterdam) and other ambassadors (e.g., Dr. Tóth, University of Nottingham; Prof. Richter, University of Southern Denmark) to promote and discuss NCA in the research community. At the **European Academy of Management Conference** (June 19 - 22, 2018) in Reykjavik, S. Hauff co-organized a symposium on “Methodological Innovation: Necessary Condition Analysis (NCA)” in order to discuss the backgrounds of the method and the possibilities to apply it.

At the 78th Annual Meeting of the **Academy of Management in Chicago**, A. Klarsfeld and B. Sieben organized together with R. Haq, L. Knappert, A. Kornau, E. Ng and F. Ngunjiri the Professional Development Workshop “Equality, Diversity and Inclusion in Under-Researched Countries: A Research Agenda”. It served to develop the projected 4th “International Handbook of Diversity Management at Work” (E. Elgar). Moreover, two co-edited special issues of *Equality, Diversity and Inclusion*, one forthcoming in 2019, result from this international cooperation.

In the course of 2018, the Professorship for Modern History (Western Europe) hosted four visiting research fellows: P. O. Cohrs (formerly Yale, now Florence), J. Nakata (Tokyo), O. Silven-



nainen (Helsinki), and G. Hatlehol (Trondheim). The cooperation mirrored the professorship's research interests, especially in the fields of international and Nordic history, and strengthened its international outreach.

The Professorship for Education Science, especially History of Ideas and Discourses on Education, organized an international interdisciplinary workshop (**"Sociology of Conventions: Pluralities of Conventions"**) in the field of new French Sociology at Helmut Schmidt University, June 14 – 15, 2018, with participants from France and other countries.

The Professorship for Work, Organizational and Economic Psychology collaborates with international partners in Austria (entrepreneurship), France (abusive leadership) and UK (health-oriented leadership).

At the Professorship for Methods of Empirical Social Research and Statistics, a network called **"Mixed Methods and Multimethod Social Research"** was established, funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) and promoting interdisciplinary and international dialogue in the area of method integration in social research. Its biannual mini-conferences and workshops provide network members with the opportunity to discuss research projects and initiate cooperation with leading international researchers in the field. Since its launch in January 2018 the network has hosted four successful meetings at cooperating universities in Hamburg, Cologne, Berlin, and Goettingen. Among its international guests, experts were J. Creswell, B. Johnson, G. Goertz, N. Fielding, and P. Bazeley.



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Outlook

The Faculty of Humanities and Social Sciences will continue to promote basic and applied research. Its researchers are involved in the conceptualization, application and implementation of respective third-party funded projects. With the help of internal university research funds, they will increasingly be able to successfully acquire projects in the future. In the professorships of the faculty, however, emphasis will also continue to be placed on research output, i.e. on nationally and internationally visible publications.



Faculty of Mechanical Engineering

Overview

The professorships in the Faculty of Mechanical Engineering at the Helmut Schmidt University / University of the Federal Armed Forces Hamburg cover a considerable range of basic and application-oriented research. This research spectrum is currently being intensified and expanded by the establishment of new professorships. Research is accompanied by high-quality teaching in small groups. Intensive programs with short study periods lead to degrees equivalent to those at civil universities.

The research work at the institutes is supported by public and industrial third-party funds. In addition to the DFG, public third-party funding is provided by the Federal Ministry of Education and Research (BMBF), the Federal Ministry for Economic Affairs and Energy (BMWi), the Federal Ministry of Defense (BMVg), the Free and Hanseatic City of Hamburg, and the Federal Highway Research Institute (BASt). The research projects are frequently carried out in cooperation with partners who are often university institutes and industrial enterprises in the Hamburg metropolitan region. For their research work, the institutes in the Faculty of Mechanical Engineering have access to well-equipped laboratories and a good computer infrastructure.

News from Research

The **Professorship for Fluid Mechanics** successfully finished the project of the Deutsche Forschungsgemeinschaft (DFG) “*Wirbelauflösende Simulationsverfahren für dynamische Fluid-Struktur-Interaktionen von leichten flexiblen Flächentragwerken*” in cooperation with the Technical University of Munich. The objective was to develop a simulation methodology to predict the coupled fluid-structure interaction of the turbulent flow around lightweight membranous structures such as outdoor tents, textile awnings or stadium roofs. For the design of such lightweight structures, the strong interaction with the turbulent highly vortical flow is crucial. Thus, a dedicated partitioned FSI simulation methodology based on well-established solvers for both disciplines (fluid/structure) and a coupling interface was developed and evaluated, taking the specific properties and the characteristic scales of both fields into account. The project was recently finished and led to a variety of publications in renowned international journals. It was also reported in the yearly report of DFG in 2015 as an example of research funding in engineering sciences.

Since 2015, the **Professorship for Mechanics** has been cooperating with the Chair for Electronics at HSU / UniBw H and the Institute of Polymer and Composites at the Hamburg University of Technology in the field of structural monitoring of multifunctional fiber composites. Electrical or electronic components are manufactured using the ink-jet process. They are used

as sensors in the later operation of the structure and enable the detection of damage in fiber composite components. The work focuses on the formulation of the inks, including the use of carbon nanotubes, from which the electronic components are produced, and the effects of the printed components on the mechanical behavior of the overall structure. During the first three years the work was supported by the Landesforschungsförderung Hamburg and in 2018 it was transformed into a project with DFG funding.

In the **Professorship for Power Engineering** power augmentation plays an important role because of the increasing part of volatile electrical energy supply. Since about 15 years two-phase flows in turbomachinery, mainly in turbocompressors, have been one of the main topics in cooperation with the Institute of Aerospace Thermodynamics of the University of Stuttgart. In 2018, a DFG funded project has been carried out modeling two-phase flow inside the compressor and measuring validation data at transonic conditions. A further project investigates the part load performance of a control stage of an industrial steam turbine under partial admission experimentally and numerically. This project is funded by BMWi and MAN Energy Solutions.

In a joint effort with University of Technology Dresden, Asera Brown Boveri Ltd (ABB AG) and BAYER AG, the **Professorship for Automation**

Engineering has accomplished a 3-year-research project to solve the problem of controlling modularized process plants. In the course of this research, a prototype of a process control system has been developed which allows to integrate process modules, such as filter units, within a few minutes instead of several days (as had been necessary before). The system has been tested successfully at a pharmaceutical production line on the Leverkusen site of BAYER AG in December 2018.

At the **Professorship for Numerical Mathematics**, the research on the design and analysis of space-time finite element methods for numerical modeling of flow, waves and coupled multi-physics systems (fluid-structure interaction, poroelasticity) was pursued. The group's 3D parallel open source front-end software DTM++ for the deal.II finite element library was complemented by efficient data structures for goal-oriented error control and automatic space-time mesh adaptation. Research funds for the Helmholtz Graduate School for the Structure of Matter (consortium of 8 partners) and within the DAAD Program of Project Related Personal Exchange with Norway could be acquired.

One consequence of the lightweight design of aircraft is the noise exposure inside the cabin, affecting passengers and staff. A major challenge within applied research at the **Professorship for Mechatronics** is to encounter this trend with noise attenuating measures. Therefore, and in the first place, the noise sources must be identified. For humans, the identification of noise sources inside enclosed spaces is no simple task, because of the occurring reflections. Hence, the Chair of Mechatronics conducts research into methods to automate this process. For this purpose, the human hearing is substituted by microphones and intuitive computa-

tion of the sound direction is replaced by algorithms. By means of inverse computation from the point of sound receiving backwards to the sound-emitting outer aircraft skin, images of the entry of noise into the sound field can be generated, that provide the basis for the application of methods for noise reduction.

In 2018 the **Professorship for Automotive and Power Train Engineering** completed a project dealing with the instantaneous behavior of a direct-injected turbocharged gasoline engine for passenger cars. The new driving cycle WLTP (Worldwide Harmonized Light Vehicles Test Procedure) shows a significantly higher proportion of transient operation than the former driving cycle NEDC (New European Driving Cycle). The investigations resulted in the more detailed knowledge, that even for the new test procedure an extrapolation outgoing from engine maps developed under steady state conditions can be carried out with sufficient accuracy for the calculation of the energy needed or, in other words, for the calculation of the fuel consumption under the new test conditions.

For several years the **Professorship for Thermodynamics** has been operating an instrument for highly accurate measurements of the speed of sound in liquids and compressed gases at high pressures. Based on very accurate speed-of-sound data sets, the method of thermodynamic integration was improved and applied to calculate accurate values of other thermodynamic properties such as the density and isobaric heat capacity from comprehensive speed-of-sound data sets. Very accurate data for isobutane, n-butane, toluene and water were generated. In particular, the density of water was determined in the temperature range between 0 °C and 95 °C at pressures up to 100 MPa with

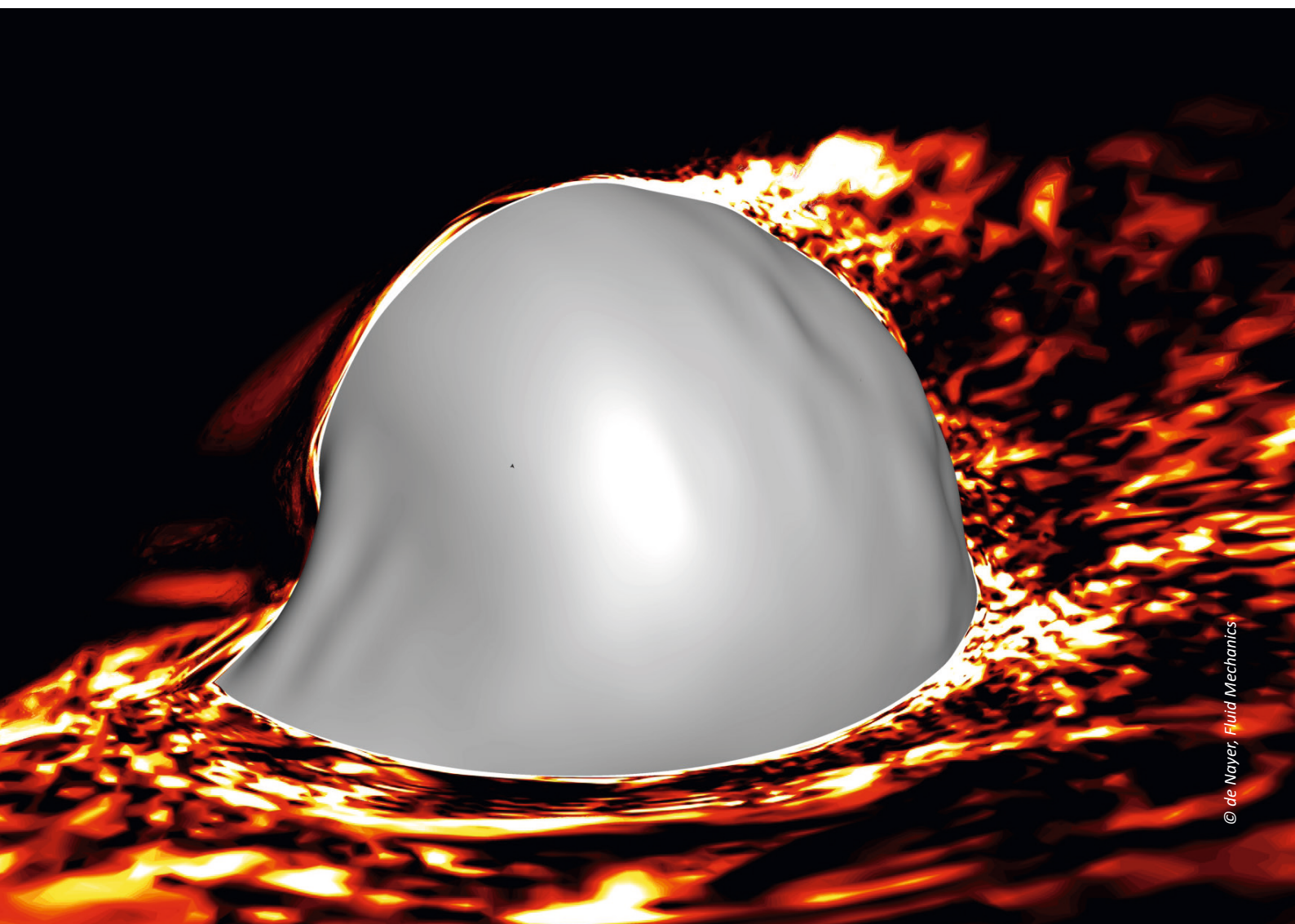


an uncertainty of two parts per million. The calculated densities at high pressures are about five times more accurate than the most accurate experimental data in literature.

At the **Professorship for Automotive Engineering** the two research domains are expanded: experimental and corresponding CAE techniques. In the first area, methods are investigated or implemented to investigate the contact between (tire) rubber and the road, especially optical methods are investigated to get insight into the contact behavior during transient driving maneuvers. Furthermore, nonlinear phenomena in automotive experimental methods are investigated. In the second area, short-fiber reinforced materials, e.g. used in chassis, are investigated using different computer methods; the material models (including simulation of injection molding process validated by CT and grey scale correlations) are used in durability predictions. Furthermore, computer methods to describe soil mechanics are refined: a methodological approach is investigated to macro-micro-transform FEM models partially to DEM

models using mechanical conservation laws and geometric triangulation transformations. A third promising topic is started: comprehensive energetic analysis of vehicles.

Since 2004 the Professorship for Machine Elements and Computer Aided Product Development has dealt with product development including product planning, methods in product development and computer integrated processes. On the research side, the important interface between development and production is examined. The aim is to develop new methods for “early product influencing” in order to meet manifold requirements of product characteristics. Using the MTO approach, novel applications and assistants are created, including the necessary change management methods. Research needs are essentially developed in industrial projects. As a result, extensive scientific findings have been developed and effectively implemented in practice. Most of the applications come from automotive industry and extend to medical technology.



Selected Publications

M. Bause, B.S.M. Ebna Hai:

Modeling and simulation of Ultrasonic Guided Waves propagation in the fluid-structure domain by a monolithic approach.
J. of Fluids and Structures, S0889-9746(18)30274-3, doi: 10.1016/j.jfluidstructs.2019.04.014

G. De Nayer, A. Apostolatos, J. N. Wood, K. U. Bletzinger, R. Wüchner, M. Breuer:

Numerical studies on the instantaneous fluid-structure interaction of an air-inflated flexible membrane in turbulent flow.
Journal of Fluids and Structures, vol. 82, pp. 577–609, (2018),
<https://doi.org/10.1016/j.jfluidstructs.2018.08.005>

P. Marks, X.L. Hoang, M. Weyrich, A. Fay:

A systematic approach for supporting the adaptation process of discrete manufacturing machines.
Research in Engineering Design, Springer, Vol. 29(4), 2018, pp. 621-41,
<https://doi.org/10.1007/s00163-018-0296-5>.

aus der Wiesche, S., Joos, F. (Hrsg.):

Handbuch Dampfturbinen.
Springer-Vieweg Verlag, Berlin, 2018

N. Rauter, R. Lammering:

A constitutive model for the analysis of second harmonic Lamb waves in unidirectional composites.
International Journal of Solids and Structures, 135, 184-196, 2018,
<https://doi.org/10.1016/j.ijsolstr.2017.11.019>

A. El Hawary, K. Meier:

Speed-of-Sound Measurements and Derived Thermodynamic Properties of Liquid Isobutane.
J. Chem. Eng. Data 2018, 63, 3684–3703,
<https://doi.org/10.1021/acs.jced.8b00202>

T. Hellberg, M. Meywerk:

Usage Based Optimisation of Characteristic Maps for Conceptual Powertrain Design.
Automotive and Engine Technology, Dec. 2017, Vol. 2, Issue 1–4, pp 49–61,
<https://doi.org/10.1007/s41104-017-0017-5>

J. Buck, S. Jukkert, D. Sachau:

Performance evaluation of an active headrest considering non-stationary

broadband disturbances and head movement.

The Journal of the Acoustical Society of America, Bd. 143 (2018), S.2571-2579,
<https://doi.org/10.1121/1.5034767>

Professors and Deputy Professors

Univ.-Prof. Dr. Markus Bause,
Numerical Mathematics

Univ.-Prof. Dr.-Ing. Michael Breuer,
Fluidmechanics

Univ.-Prof. Dr.-Ing. Rainer Bruns,
Technical Logistics

Dr. Thomas Carraro,
Applied Mathematics

Univ.-Prof. Dr.-Ing. Alexander Fay,
Automation Engineering

Dr. Colin Glass,
High Performance Computing

Dr. Daniel Höche,
Computational Material Design

Univ.-Prof. Dr.-Ing. Franz Joos,
Laboratory of Turbomachinery

Univ.-Prof. Dr.-Ing. Thomas Klassen,
Materials Science

Univ.-Prof. Dr.-Ing. Rolf Lammering,
Mechanics and Vice President for Research

Univ.-Prof. Dr.-Ing. Frank Mantwill,
Machine Elements and Computer Aided Product Development

Univ.-Prof. Dr.-Ing. Karsten Meier,
Thermodynamics

Univ.-Prof. Dr.-Ing. Martin Meywerk,
Automotive Engineering

Univ.-Prof. Dr.-Ing. Bernd Niemeyer,
Process Engineering, in particular Material Separation

Dr. Alexander Pokahr,
Computer Science in Mechanical Engineering

Univ.-Prof. Dr.-Ing. Hendrik Rothe,
Measurement and Information Technology

Univ.-Prof. Dr.-Ing. Delf Sachau,
Mechatronics

Univ.-Prof. Dr.-Ing. Wolfgang Thiemann,
Automotive and Power Train Engineering

Dr.-Ing. Wolfgang Weber,
Statics and Dynamics

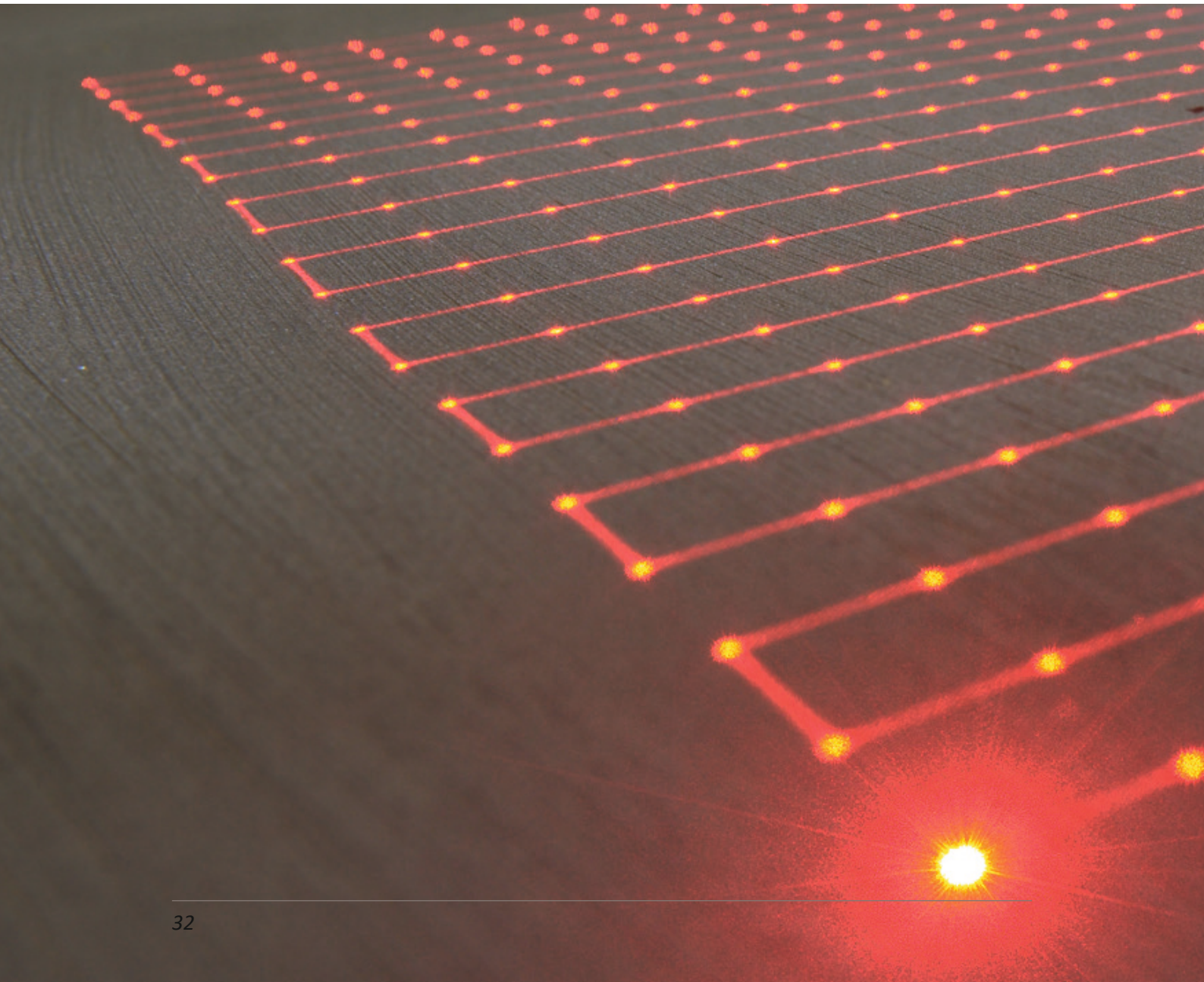
Univ.-Prof. Dr.-Ing. Jens-Peter Wulfsberg,
Manufacturing Engineering

Cooperation and International News

Prof. MengChu Zhou, Distinguished Professor of Electrical and Computer Engineering and the Director of Discrete-Event Systems Laboratory at the New Jersey Institute of Technology (NJIT), Newark, NJ, USA, joined the Professorship of Automation Engineering as a Distinguished Guest Professor as a recipient of the “**Humboldt Research Award for Senior US Scientists**”.

At the Professorship for Numerical Mathematics, the successful cooperation and exchange with Prof. M. Wheeler (University of Texas at Austin), Prof. Dr. F. Radu (University of Bergen), Prof. Dr. G. Matthies (University of Dresden), Prof. Dr. F. Schieweck (University of Magdeburg) and Prof. Dr. J. Kraus (University of Essen-Duisburg) was continued by research visits and joint publications. A special session was (co-) organized with Prof. Florin A. Radu (University of Bergen, Norway) at **ECCOMAS 6th European Conference on Computational Mechanics**, 7th European Conference on Computational Fluid Dynamics (Glasgow).

Dr. Artem Eremin, Kuban State University, Krasnodar, Russia, was an **Alexander von Humboldt Research Fellow** at the Professorship of Mechanics for 18 months and conducted numerical and

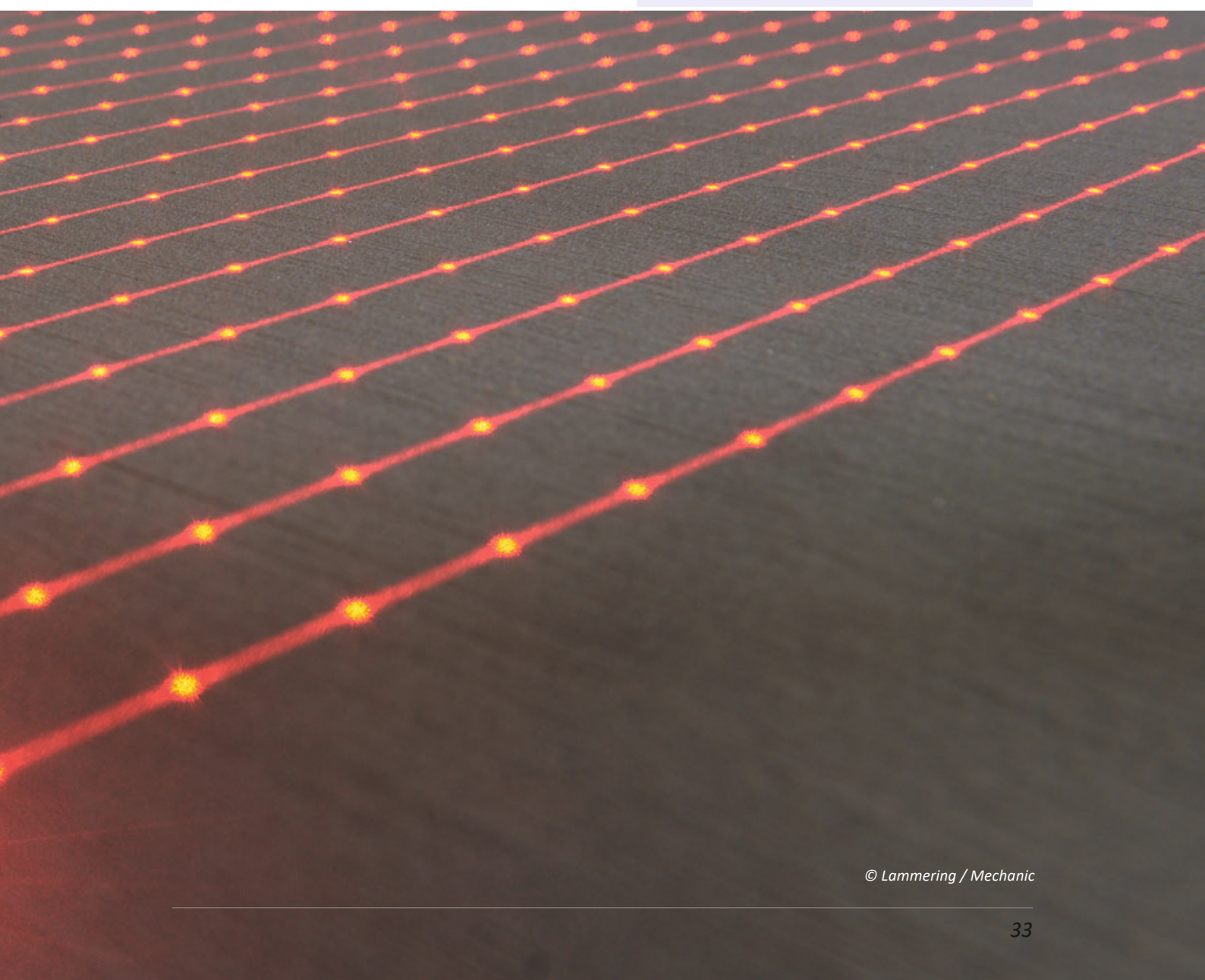


experimental investigations on the propagation of guided ultrasonic waves. The stay ended at the end of February 2018. With a **DAAD scholarship**, Dr. Eremin returned to the Professorship of Mechanics from August to December 2018.

The Professorship of Thermodynamics is a member of the International Association for the Properties of Water and Steam (IAPWS) and International Association for Transport Properties (IATP).

Outlook

As already mentioned, the faculty is in an expansion phase. Within the faculty, two areas are developing which are connected with the establishment of numerous professorships: On the one hand, there is the area of security research and logistics, and on the other, there is the area of civil engineering. The first area is connected with the establishment of the chairs for Computational Material Design and High-Performance Computing in the faculty. As for the second area, a total of eleven professorships will be established in the field of civil engineering, covering this field with a focus on hydraulic engineering. In 2018, a number of deputy professors were hired and numerous appointment procedures were carried out. When this research report went to press, the first professorships were filled.



Contribution to the Cluster of Excellence “Understanding Written Artefacts”

Thomas Jacobsen, Chair of Experimental and Biological Psychology at HSU / UniBw H, is a member of University of Hamburg’s Cluster of Excellence “Understanding Written Artefacts - Material, Interaction and Transmission in Manuscript Cultures”. The cluster centers its research activities around writing as one of the most important cultural techniques. For a long part of their history, humans have employed handwriting in various ways, building diverse and complex manuscript cultures. The cluster takes a global perspective, using diachronous as well as synchronous analysis approaches. Taking the material object as the basis of the investigation, it is a highly collaborative research endeavor, bringing together about 40 investigators from the humanities, the sciences, computer science and psychology. They will use a unified, comparative and comprehensive approach to studying written artifacts, in their production as well as reception.

The HSU / UniBw H contributes the psychological stance to understanding written artifacts. Here, it is not so much the psycholinguistic side of text processing, but rather processes of valuation, affect, and the processing of visual arrangements that is in the focus of the psychological analysis.

Over the past years, psychologist from the HSU / UniBw H have contributed to the understanding of valuation processes and emotional processes in response to aesthetically relevant artifacts. This expertise along with a general cognitive neuroscience research approach will be brought to bear on understanding written artifacts.

In the research field C of the cluster, Creating Originals, Prof. Quenzer from University of Hamburg and Prof. Jacobsen from HSU/UniBw H investigate the valuation of handwriting in the digital age. They will conduct a case study in Japanese calligraphy. Contemporary manuscript cultures, like Japanese calligraphy, show practices of very high valuation of a specific group of handwritten artifacts. The research project will approach the topic of valuation of calligraphic manuscript from two angles. It will combine the cultural sciences’ cultural studies approach with a neuro-cognitive, experimental, and psychological approach to allow for a cross-field assessment beyond conventional notions.



Contribution to the Cluster of Excellence “Climate, Climatic Change, and Society”

Two researchers from HSU/UniBw H, Michael Berlemann, Chair for Political Economy and Empirical Economics, and Stefan Traub, Chair for Behavioral Economics, are members of University of Hamburg’s Cluster of Excellence “Climate, Climatic Change, and Society (CliCCS)”. The cluster aims at understanding climate changes, taking into account internal variability, extreme events, and unexpected side effects, thereby addressing the natural and social spheres as well as their interactions. Thus CliCCS’ overarching research question is: Which climate futures are possible and which are plausible?

CliCCS will investigate how climate changes and how society changes with it, thereby feeding back on climate. It will identify those climate futures that are consistent with both climate and social dynamics (possible), and those we expect to unfold with appreciable probability (plausible). The program will use observations and models of the natural, coupled human-environment, and social systems to understand the processes governing these systems, and to formulate adaptation and mitigation strategies. The scientific objectives will be achieved through three intertwined research themes:

A – provides the natural basis for understanding climate system dynamics, including climate variability and extremes, the climate change already unfolding, and the climate change expected for the future.

B – investigates the climate-related dynamics of social systems and provides the social science foundation for the construction of plausible climate scenarios, with a specific emphasis on deep decarbonization.

C – focuses on coupled human-environment dynamics on a regional level, where climate change becomes visible and where sustainable adaptation can be realized by local actors.

The themes combine the research of 14 dedicated projects.

Michael Berlemann and Stefan Traub will contribute to the subproject “Coping with Climate-Related Uncertainties and Variabilities” (B5).

Climate change goes along with increases of climate risks, especially increases in the frequency and/or the severity of extreme weather events and natural disasters. Most likely, individuals as well as firms will adapt their behavior to these increasing risks, thereby also influencing future economic and social development. In order to be able to generate likely economic and social scenarios, more knowledge on the reaction of individuals and firms on increasing climate risks is necessary. Whenever suitable data is available, empirical methods can be used to study the behavioral reaction to increased climate risks. However, many dimensions of individual behavior are not directly observable in reality. Hence, behavioral consequences of changing climate risks will primarily be analyzed using experimental methods. These experiments will be designed along theoretical models of economic growth, in which individuals solve intertemporal optimization problems in order to maximize their utility. It will then be studied how observed behavior in the experiments reacts to various levels and sorts of disaster risk (capital risk, life risk). It will also be analyzed whether and how disaster risk affects cooperation among individuals, e.g. in terms of contributing to joint disaster prevention measures.

Facts and Figures 2018

Study and Teaching

Department	Students	
	Total	Proportion of Women
ES	1,136	9.5 %
EE	213	4.7 %
HS	917	25.7 %
ME	294	15.6 %
Total	2,587	14.5 %
International	86	

Success Rate (Bachelor's Degree)	
First-year students (class of 2013)	539
Graduated students (class of 2013)	388
Success rate (as of December 2017)	72 %

Success Rate (Master's Degree)	
First-year students (class of 2012)	335
Graduated students (class of 2012)	288
Success rate (as of December 2017)	86 %

PhD Degrees and Habilitations (Academic Year 2016/2017)	
PhD degrees	56
Postdoctoral lecturer qualification	7

Staff

University Staff	Members ¹	Positions ²
Academic staff	395	293
Non-academic staff	454	373
of which: Academic departments	105	107
Military department ³	134	82
Central facilities (CF)	44	33
Central administration	114	103
Library	33	35
President's staff	24	13
Trainees	19	19
Total	868	685

¹ Headcounts as of October 1, 2017

² Converted to full-time positions (FTEs); for research assistants 18 hours per week were taken as a basis for a full-time equivalent.

³ Military leaders and student services and support

Academic Staff

Department	Professors		Academic Staff		Assist.
	Members	Positions	Members	Positions	Members
ES	39	39	106	65	13
EE	12	12	28	36	4
HS	29	29	91	39	2
ME	17	17	52	55	2
CF			0	1	
Total	97	97	277	196	21

Appointments (Academic Year 2016/2017)	
An offer of professorship from HSU accepted	2
An offer of professorship from other universities accepted	0

Funding

Spending (Fiscal Year 2017)	Euro
Personnel costs	43,222,592
Material expenses	4,675,932
Real estate costs ¹	43,158,305
Capital expenditure	15,725,000
IT costs	1,790,996
Total	108,572,825

¹ including rental and leasing charges (32.325.486 Euro)

Third-Party Funds

Externally Funded Staff ¹	
Academic staff	119
Other staff	23
Total	142

¹ Third-party funded personnel, as far as included in the university's budget (headcount)

Spending by Sponsors (Fiscal Year 2017)	Euro
DFG German Research Foundation	1,247,937
Federal Ministry of Defense	2,916,252
Federal Ministry of Education and Research	1,482,419
Other federal ministries	1,876,160
Federal authorities	124,826
European Union	256,782
State ministries and authorities	372,042
Contract research	2,597,717
Other public organizations	360,292
Foundations	188,376
Total	11,422,803



Spending by Departments (Fiscal Year 2017)	Euro
EE	2,404,392
HSSc	642,154
ME	5,236,285
ESSc	1,913,251
ZtB	339,152
ZWW	91,462
Other	796,107
Total	11,422,803

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Responsible

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Vice President / Research

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