

Renewed funding for “Hearing4all” Excellence Cluster

The University of Oldenburg has been successful with its application for the Excellence Strategy funding line: the Cluster of Excellence “Hearing4all: Medicine, Basic Research and Engineering Solutions for Personalized Hearing Care” has been awarded funding for the next seven years. Basing their proposal on the results of their research so far, the Oldenburg scientists, together with hearing researchers from Hannover, applied for 55 million euros to finance the project. Across Germany a total of 57 Clusters of Excellence have been awarded funding through the Excellence Strategy programme. Hearing loss is the most frequent chronic ailment to affect the human senses. The goal of the team of researchers led by Oldenburg physicist and physician Prof. Dr. Dr. Birger Kollmeier is to develop solutions tailored to the requirements of individual patients – from diagnostic procedures to hearing aid technology and other treatment options. Over the past few

years the scientists working on the project have developed key building blocks for such solutions, for example multilingual speech tests and implants for the section of the midbrain which processes acoustic signals. In future, the team’s activities will be divided into four lines of research reflecting the chain of development from basic research to hearing technology as well as the degree of hearing loss. In the first line of research the scientists will use neuroscientific methods to investigate the complex interaction between hearing, perception and processing in the brain. The second research line aims to construct a multilingual virtual hearing clinic. In the third, the researchers will develop personalised diagnosis and treatment procedures for patients with moderate to severe hearing loss and complete deafness. Based on the findings of these activities, the fourth will create a brand new system technology for the hearing aids of the future. “Hearing4all” is one of

the world’s leading centres in medical technology, hearing research, audiology, and medical diagnostics and therapy. The team comprises twenty-five neuroscientists, physicians, psychologists, linguists, physicists and engineers from the universities of Oldenburg and Hannover and also Hannover Medical School. The Jade University of Applied Sciences, HörTech GmbH, the Hörzentrum research institutes in Oldenburg and Hannover, two Fraunhofer institutes and the Hanse-Wissenschaftskolleg (HWK) are also partners in the project. Prof. Dr. Thorsten Dittmar und Prof. Dr. Helmut Hillebrand of Oldenburg University’s Institute for Chemistry and Biology of the Marine Environment will also receive funding within the framework of the Excellence Strategy. The two scientists were co-applicants for the Excellence Cluster “The Ocean Floor: Earth’s Uncharted Interface”, which is based at the University of Bremen.

Versatile bacteria

The Collaborative Research Centre “Roseobacter” will receive 9.7 million euros from the German Research Foundation (DFG) for its final funding phase ending in 2021. A team of scientists from Oldenburg, Braunschweig, Göttingen and Bonn led by microbiologist Prof. Dr. Meinhard Simon of the Institute for Chemistry and Biology of the Marine Environment is conducting research on one of the most important groups of marine microorganisms – the roseobacter bacteria. The team is studying

the evolutionary, genetic, physiological, and adaptive traits of the bacteria. The results from five expeditions to the Atlantic and Pacific have supplied information on the geographic distribution of the different groups of bacteria and the differences in their metabolism and ecology. On the basis of this data and using mathematical models the researchers want to analyse the role the bacteria play in the global carbon cycle and the impact climate change is having on microbe communities.

The energy transition as a social process

What happens in a social perspective if a region undergoes fundamental change – if for example it commits itself to the energy transition to renewable energies? How do the involved parties negotiate with each other, and what do they learn in the process? These and other questions are the main focus of the new junior research group “Regional Energy Transition: The Social Processes of Negotiating, Norming and Learning in the Wind Energy Sector”, which is led by Oldenburg sociologist Prof. Dr. Jannika Mattes. The DFG is financing the project with more than 1.2 million euros over five years within the framework of the Emmy Noether Programme. The project’s inclusion in this prestigious programme has enabled Mattes to employ three co-researchers. The team is based at the University’s Institute of Social Sciences and is developing a theoretical concept that aims to advance understanding of the energy transition. In addition, the scientists are analysing six regions in Germany and investigate how their activities in the wind energy sector are evolving. The analysis places special emphasis on the interaction between the actors from different societal fields: science, economics, politics and civil society. On the basis of interviews with experts, the researchers want to study how these actors negotiate agreements with each other on decisive processes, how their understanding of their role develops in the process, and what learning processes this involves. The research will also take account of citizens affected by the transition – and indeed everyone whose behaviour affects the process of change. The scientists plan to present their findings to those who play a key role in designing the energy transition and thus make a valuable contribution to its realisation. The results could for example be used to ensure that political instruments are better adapted to the main actors and the specific characteristics of a region.

Better access to the world of work

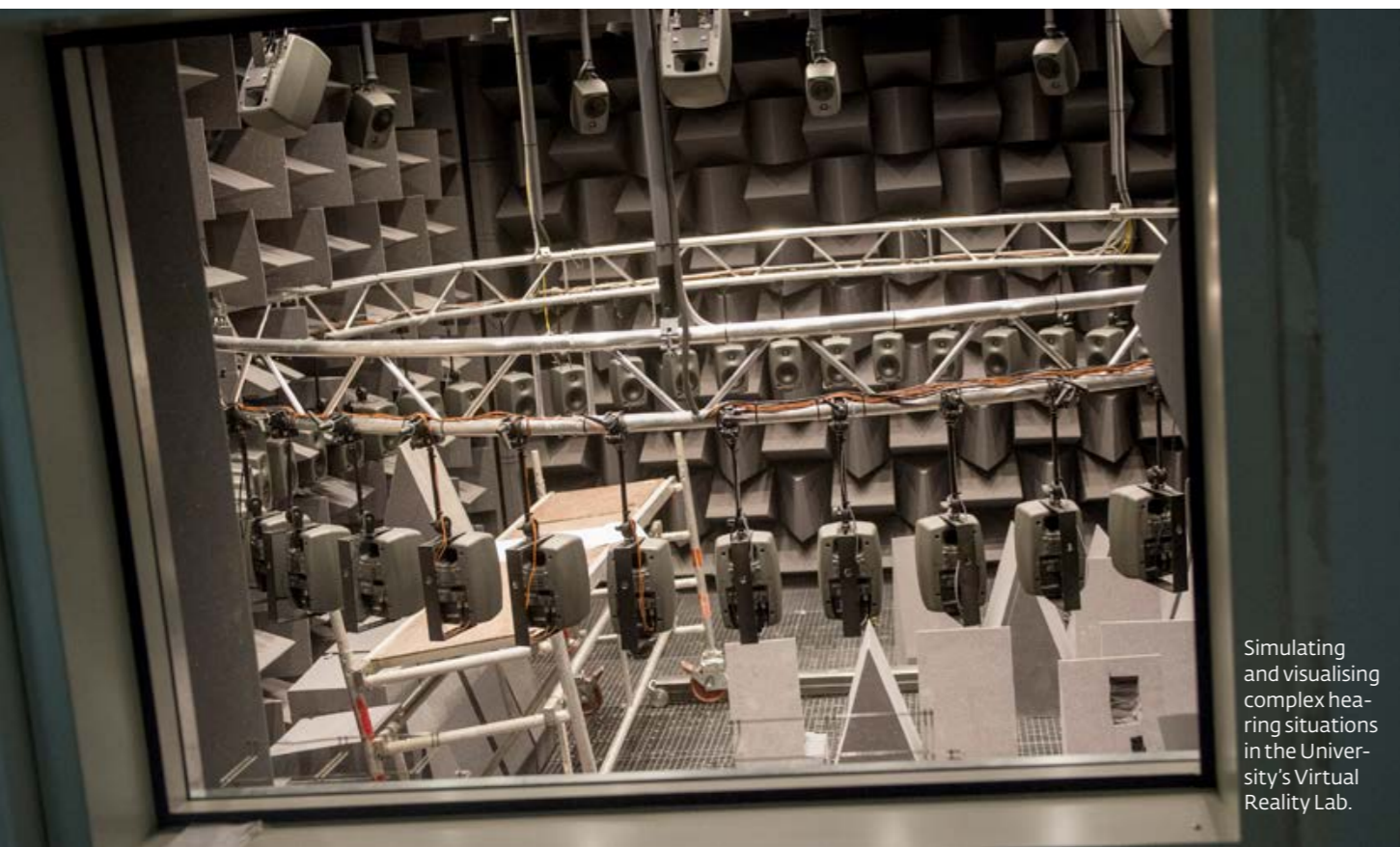
Most youths with mental disabilities and limited communication skills move on to sheltered workshops for people with disabilities or day care centres once they finish school. In many cases they are not asked what kind of job they would like to have. The research project “Inclusion in the Transition Process” (Teilhabe im Transitionsprozess – TiT) run by the University of Oldenburg and 13 other partner institutions hopes to change this: a team led by Prof. Dr. Andrea Erdélyi and Prof. Dr. Ingeborg Thümmel of the Department of Special Needs Education and Rehabilitation aims among other things to develop communication formats through which these youths will

be able to express their needs in this area. The Federal Ministry of Labour and Social Affairs (BMAS) is providing approximately 450,000 euros in funding for the project over three years. To gather material for their study the research team is accompanying pupils and their teachers over a period of three years. As part of the project the youths complete internships in the occupational field of their choice. In a second project led by Oldenburg-based software company Targis, special needs teachers from the University are working to improve the chances of youths with mental disabilities finding work on the regular job market – for example using assistive technologies.

Stable electricity grids

How does the electricity grid have to change in the course of the energy transition? A group of computer scientists from the University of Oldenburg are investigating this question in a German Research Foundation (DFG) priority programme. Led by Prof. Dr. Sebastian Lehnhoff of the Energy Informatics division, the team is involved in three of the projects in the interdisciplinary programme, with each of these projects receiving approximately 300,000 euros in funding. Because more and more electricity

comes from renewable sources, power generation is fluctuating more than it used to. Lehnhoff and his colleagues are researching how to keep the grid stable despite these fluctuations. One of the solutions they are studying is local control that acts independently and therefore makes the system more robust. In addition, the Oldenburg researchers are analysing the risk of large-scale power failures and developing strategies for bringing the grid back into operation in a coordinated manner after such failures.



Simulating and visualising complex hearing situations in the University’s Virtual Reality Lab.

New Collaborative Research Centre for hearing acoustics

Background noise like clattering crockery or a ringing phone make it difficult for people with impaired hearing to follow a conversation – even if they possess modern hearing aids. A new Collaborative Research Centre (CRC) at the University of Oldenburg has the mission to create the basis for improved hearing aids and assistive listening systems over the next four years. The German Research Foundation (DFG) will provide just under nine million euros in funding for the CRC titled “Hearing Acoustics: Perceptive Principles, Algorithms and Applications (HAPPAA)” and led by psychoacoustics expert Prof. Dr. Volker Hohmann. At the centre of the CRC’s activities is

the interaction between people with impaired hearing and their acoustic environment. Up to now hearing acoustics had not taken into account that people react to voices and sounds by turning their heads – with the result that many hearing aids don’t work as well in real-life situations as they do in the laboratory. Hohmann and his colleagues plan to develop an intelligent earpiece that offers high sound quality and at the same time reduces noise interference. In the long term the CRC’s findings are also to be used for other applications, for example in entertainment electronics, for speech recognition or for man-machine communication.

Understanding populist culture

What role is music playing in the rise of populist ideologies in Europe? An international team of researchers led by Oldenburg University music education expert Prof. Dr. Mario Dunkel is investigating this question over a three-year period. The Volkswagen Foundation is providing just under a million euros in funding for the project. The researchers are studying commercially successful musicians and bands whose songs pick up on populist ideas and images. The researchers’ theory is that there is a connection between these musicians’ success and the spread of populist ideologies. To confirm its theory, the team is investigating the links between lyrics and music videos and musical parameters such as form, rhythm, melody and harmonics in music from different countries. They analyse how the songs are received by the public and examine the differences and similarities between them. They also aim to develop ideas for didactic methods that promote critical awareness vis-à-vis populist cultures.

Digitalisation and legal issues

How the legal system reacts to the advancing digitalisation is the main focus of the University’s new “Interdisciplinary Centre for the Rights of the Information Society (ZRI)”. The cross-faculty centre was established to carry out research and teaching and provide counselling on legal issues arising from the rapid development of modern information and communication technology. Intelligent or self-learning systems, for example for personalised marketing in online commerce, for energy efficiency in the smart home or an optimised personal mobility, pose new legal requirements in terms of data protection, IT security and consumer protection. The use of self-driving vehicles and robots raises new questions of liability, among others. Prof. Dr. Jürgen Taeger, a law professor, has been elected as director of the centre. Prof. Dr. Sebastian Lehnhoff, a computer scientist specialised in energy issues, and Prof. Dr. Rainer Röhrig, an expert on medical computer science, are also on the board of directors. Jurist Dr. Edgar Rose is in charge of managing the centre.

Islands of diversity

Food webs and biodiversity in landscapes that are subject to constant change are the focus of the new research group „DynaCom“ led by biodiversity expert Prof. Dr. Helmut Hillebrand of the Institute for Chemistry and Biology of the Marine Environment. The German Research Foundation (DFG) has approved three million euros in funding for the project for an initial period of three years. In addition to the Oldenburg scientists, researchers from the Senckenberg Institutes in Wilhelmshaven and Frankfurt, the universities of Göttingen and Münster, the German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig and the Administration of the Lower Saxon Wadden Sea National Park are also participating in the project. At the centre of the project is the ecological theory of island biogeography, which analyses the interplay between immigration and extinction for all the species on an island using mathematical models. This is an important aspect for practical nature conservation because urban sprawl has created many island-like, isolated habitats. In order to assess how environmental changes like those resulting from climate change will affect ecosystems, researchers need to be able to predict not just how different species numbers will develop, but also which species will colonise island habitats and how they will interact with each other. To do this the team is now studying the typical traits and functions of different species and how these factors determine the role of individual organisms within an ecosystem. This trait-based approach makes it easier for scientists to generalise research findings and apply them to ecosystems across the globe. Observations and targeted experiments are to be carried out on 12 artificial islands which were built especially for this purpose in the Wadden Sea near Spiekeroog in 2014. The researchers will also use mathematical models and data gathered from studies of island ecosystems performed all over the world.



Millions of unsorted letters, records and documents from the time of the naval wars are stored in the British National Archives. Over the next two decades a team of researchers from Oldenburg will sort through them and make them accessible to the public.

The world in mailbags

A treasure trove of historical papers held by the National Archives in London was left virtually untouched over several centuries: the “Prize Papers” – a collection of more than 4,000 boxes and sacks full of letters, diaries, journals, ship cargo lists and other documents dating back to the Early Modern Period. Over the next 20 years an international team of researchers led by Oldenburg historian Prof. Dr. Dagmar Freist will view, catalogue and digitise this unique archive and make it accessible to the public. In autumn 2017 the project “Prize Papers. Analysis – Digitisation – Presentation” (“Prize Papers. Erschließung – Digitalisierung – Präsentation”) was incorporated into the Academies’ Programme under the sponsorship of the Göttingen Academy of Sciences and Humanities. The Academies’ Programme is jointly funded by German federal and state governments. A total of 9.7 million euros has

been earmarked for the project. Freist and other researchers first began examining the documents held at the National Archives in 2012. Until that point the papers had gone largely unnoticed. The incorporation of the project into the Academies’ Programme means that they can now be subject to systematic analysis. The Prize Papers date back to the period of naval wars between 1664 and 1817 during which England, the Netherlands and other nations were locked in a battle for dominance of Europe and the world. During these wars, privateers captured more than 30,000 vessels and, in accordance with the laws of that time, confiscated not only the cargo, but also all the papers they found on board these ships because they had to be able to prove in court that the ship in question and its cargo belonged to the enemy. Once the trials of the High Court of Admiralty in London

had come to an end, all the evidence together with the court documents was stored in the Tower of London – and over time forgotten. For the researchers this was a fortuitous occurrence because this unsorted collection of papers puts them in the unusual position of being able to explore an “unarchived archive”. It contains sources that under normal circumstances would never have been preserved for posterity: documents written by women, children or people who were barely able to write; scraps of paper with brief but important notes that would normally never have been kept because they would have seemed so trivial and irrelevant, and also letters, records and documents on highly important historiographic topics such as slavery. The scientists hope that the Prize Papers will provide new insights into the history of the Europeans and their responsibility in a globalising world.