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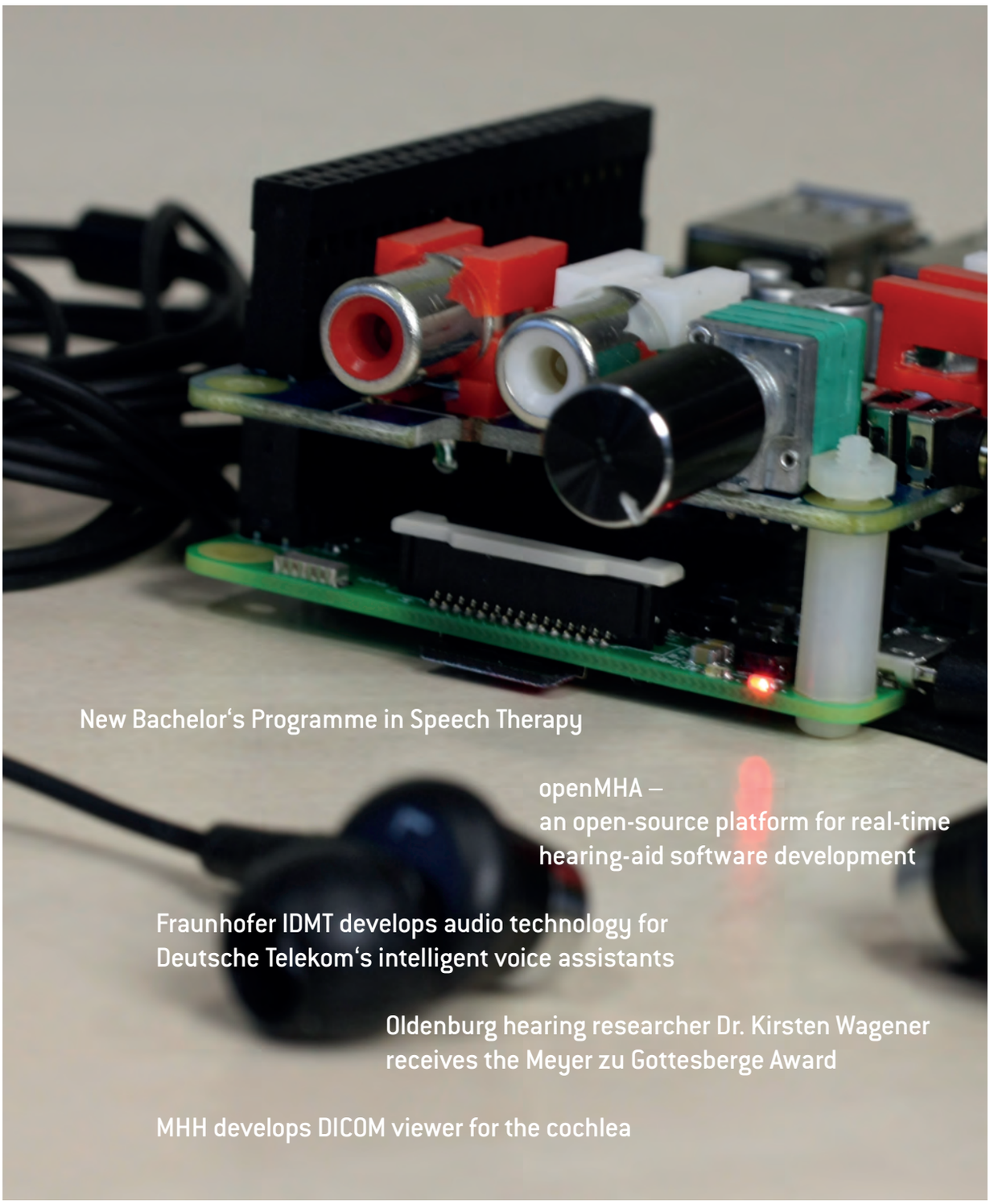
News from the Auditory Valley

AUDITORY VALLEY
FUTURE HEARING

Hearing for all. All people, all situations, all industries.



New Bachelor's Programme in Speech Therapy

openMHA –
an open-source platform for real-time
hearing-aid software development

Fraunhofer IDMT develops audio technology for
Deutsche Telekom's intelligent voice assistants

Oldenburg hearing researcher Dr. Kirsten Wagener
receives the Meyer zu Gottesberge Award

MHH develops DICOM viewer for the cochlea

Hearing 4all

Exzellenzcluster im
AUDITORY VALLEY
ZUKUNFT HÖREN

Spring / Summer 2018

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Future Hearing: Under this motto, the Auditory Valley research and development network bundles know-how on all aspects of hearing. With this magazine, we would like to regularly take you into the fascinating and varied world of researchers.

In the section „Sonic Boom“, this issue focuses on new research results from the project „mEEGaHStim - Electri-cal Brain Stimulation Improves Speech Understanding“ and a DICOM Viewer for the cochlea developed at the Hanover Medical School. In the „Directional Filter,“ we present the Citizen-Sciences project „Hear How You Like to Hear! We present a colourful mixture of research news and event reports in the „Pink Noise“ section. This issue again focuses on the developments and results of Hearing4all, the excellence cluster in the Auditory Valley.

We hope you enjoy reading it!

Your CLICK editorial office

P.S. Would you prefer to receive „CLICK“ as a PDF file by e-mail? Please feel free to contact us at info@auditory-valley.com

INHALT

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Imprint:
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V.i.S.d.P: Prof. Dr. Dr. Birger Kollmeier, Stephan Albani
Editorial staff and layout: Swantje Suchland, Dr. Corinna Pelz, Daniela Beyer. English: www.stels-ol.de
CLICK is published for free twice per year.

Björn Thümler
Minister of Science and Culture of Lower Saxony

Dear reader,

Hearing loss is a widespread affliction that affects more than 430 million people worldwide. Every second person over 65 years of age has a hearing loss that should be treated. Due to demographic change, the number of people affected is rising steadily.

The consequences of hearing loss are often underestimated, because the important role hearing plays in everyday communication is often only noticed by those affected when their hearing deteriorates.

The state of Lower Saxony is proud of the work in the Cluster of Excellence Hearing4all. Over the past six years, sci-entists have achieved internationally visible success in individual hearing diagnostics and the correspondingly adapted provision of personal hearing aids. With digital therapy systems, people with various forms of hearing loss can be offered opportunities to learn to hear again. Hearing4all covers the entire development chain from basic research to hearing technology. The questions exa-mined have their origin in unsolved clinical and practical problems. In concrete terms, this means that the results will quickly benefit people with hearing loss!

Since 2006, the state of Lower Saxony has promoted cooperation between the universities and research institutions associated in the „Auditory Valley“ because we have recognized [illegible]undling the expertise of the locations at Oldenburg University, Hannover Medical School and Leibniz University Hannover brings invaluable added value.

Continuity is a key success factor in research. Only in this way can established structures be used and ultimately generate profits. We therefore support the current propo-sal Hearing4all 2.0 and wish you every [illegible] for your review.

Björn Thümler
Minister of Science and Culture of Lower Saxony

Foto: Universität Oldenburg

Before the scientists attach the electrodes, they have to precisely measure the head of the test person

mEEGaHStim - Electrical brain stimulation improves speech understanding

A novel application of electrical brain stimulation could help people with hearing problems to better understand speech, even in noisy environments. A team of researchers led by the Oldenburg psychologist Prof. Dr. Christoph Herrmann used so-called transcranial electrical brain stimulation to make simple sentences more understandable for test persons, despite interfering noise. The scientists from Oldenburg, Lübeck and Salzburg published their results in the journal „Neuroimage“. Herrmann has also applied for a patent for this principle of brain stimulation.

Speech is often harder to understand when additional voices are present as background noise - for example in a noisy restaurant. This is especially true for the elderly and those who wear hearing aids. Even modern hearing aids cannot compensate for this so-called cocktail-party effect. This is because the devices receive no information about the speaker to whom the wearer is listening.

„Transcranial electrical brain stimulation could help in these situations," says Herrmann. In order to improve speech understanding with this method, a computer program that was specially developed by the Oldenburg researchers first evaluates a sound signal that arrives at the ears and calculates the so-called envelope curve. This refers to the coarse structure of sound, for example in a spoken sentence. This signal is transmitted via two or more electrodes attached to the scalp as a weak electrical alternating current through the temporal lobe,- the region in which the brain processes hearing information. The aim is to sharpen the perception for a certain sound source by bringing the electrical activity of the brain, which is measured during hearing, into synchrony with the external current source. „In technical terminology, this is called frequency entrainment," explains Herrmann.

In the current study, a total of 19 young, healthy test subjects received such stimulation while listening to sentences consisting of five words. Different levels of noise masked these sentences. Afterwards, the test persons repeated the words - as far as they had understood them. The strength of the current the test subjects received during the experiment via the electrodes was so low that they did not feel it. The scientists also carried out control measurements in which either no current at all or only a mild direct current flowed through the electrodes. However, neither the test subjects nor the scientists knew the respective experimental situation during the experiment, so the study was double-blind.

The result: Compared to the control measurements, the test subjects that had received transcranial brain stimulation understood the sentences significantly better despite the noise. However, it was found that a time delay in the range of tenths of a second between the onset of the speech signal and the onset of the stimulating current had different individual effects on the test subjects. The researchers assume that the current administered either increases or interferes with the so-called frequency entrainment - depending on the selected delay.

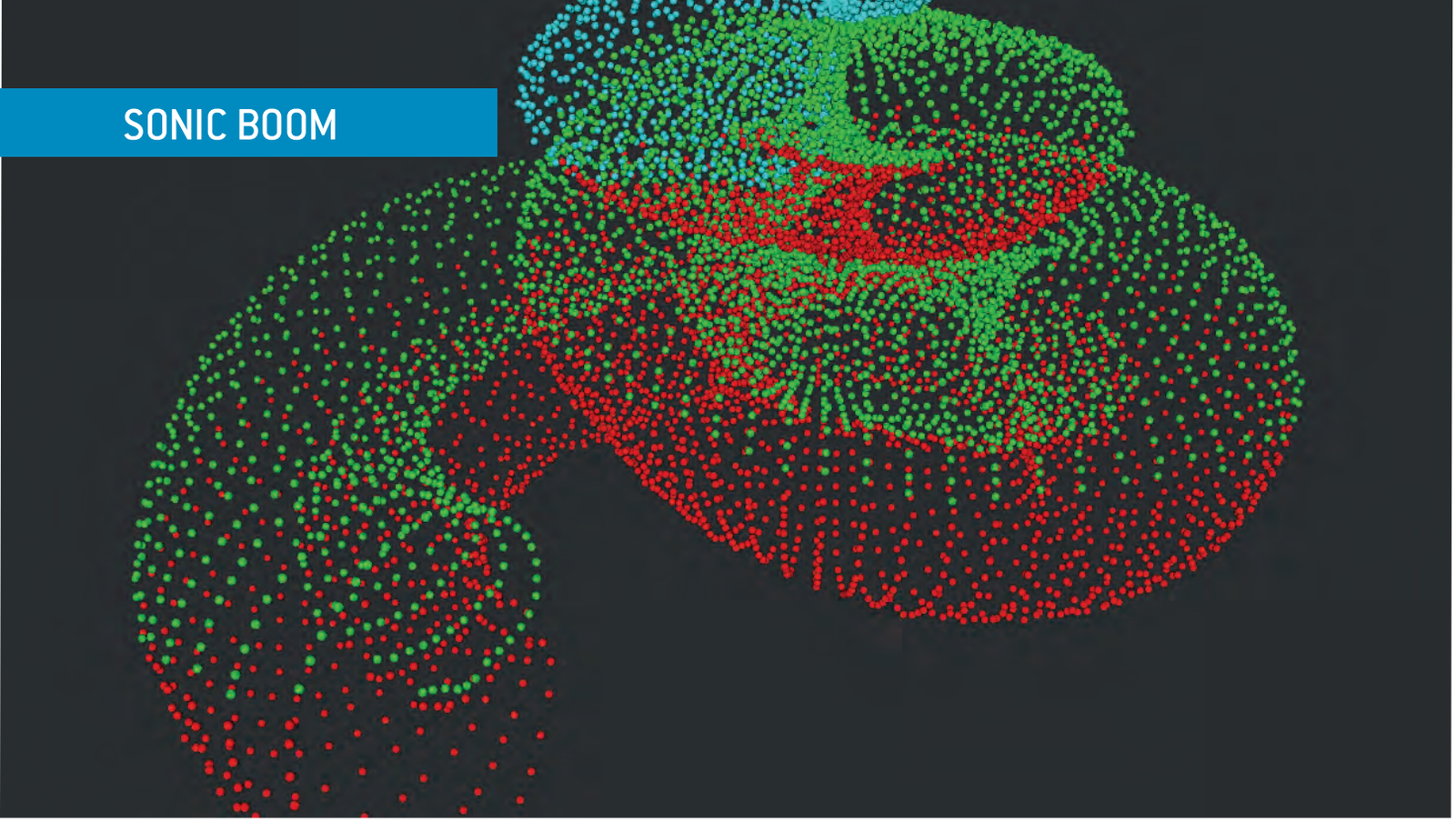
„With our study, we have shown that the method works in principle," says Herrmann. But before the technology is suitable for everyday use, the researchers have to overcome a few hurdles. For example, it is not yet clear how long the effect of brain stimulation will last. In addition, the scientists have to test even more realistic discussion situations. And the equipment is still bulky. In the long term, the goal is to make the electrodes and the data-processing technology as small as possible and to combine them with existing hearing aids, says Herrmann.

The researchers are pursuing this goal as part of the joint project „mEEGaHStim - Mobile EEG-based brain stimulation to improve hearing", which the German Federal Ministry of Education and Research (BMBF) is funding with two million euros from 2017 to 2020. Under the leadership of Neuroconn in Ilmenau, a manufacturer of brain stimulators, Herrmann's team cooperates with the Hearing Centre Oldenburg, the Fraunhofer Institute for Digital Media Technology (IDMT, project group hearing, speech and audio technology), the University of Siegen and the hearing-aid company Advanced Bionics. „Our goal is to develop a prototype during the course of the project," says Herrmann.

Original publication: Anna Wilsch, Toralf Neuling, Jonas Obleser, Christoph S. Herrmann (2018) Transcranial alternating current stimulation with speech envelopes modulates speech comprehension. Neuroimage 172, 766-774.

Prof. Dr. Christoph Herrmann is investigating how electrical brain stimulation can improve the perception of speech.

Foto: Universität Oldenburg



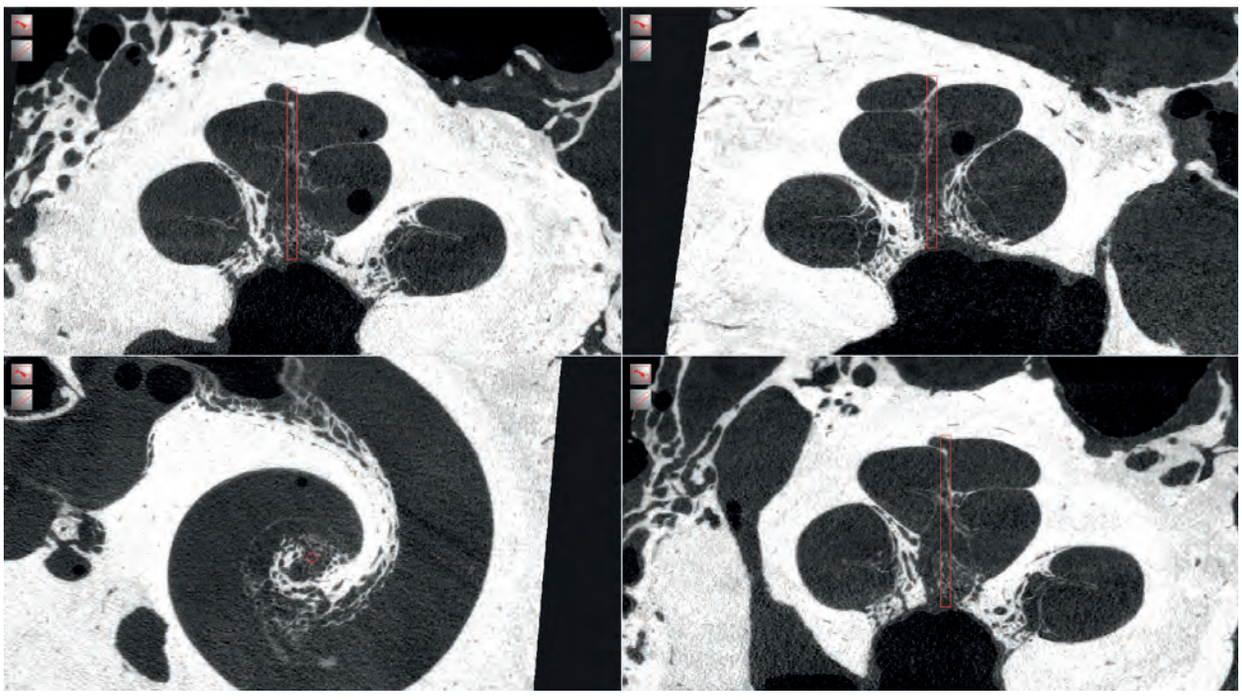
A DICOM viewer for the cochlea

Three-dimensional imaging has become an integral part of clinical diagnostics. Well-known applications are computed tomography (CT), digital volume tomography (DVT) and magnetic resonance imaging (MRI). In the context of cochlear implantation, the image data help doctors to clarify preoperatively whether the cochlea has signs of pathological changes or atypical growth forms that stand in the way of implantation or at least have to be taken into account during surgery.

Patient image data, which are made anonymous and used with the consent of patients, are also an irreplaceable source of new knowledge for research. Only with such data is it possible to carry out statistical analyses of the sizes and characteristics of the cochlea in large samples. To a lesser extent, high-resolution image data of samples prepared by micro-CT or histological preparation are also available for research purposes. These data can be used to identify even tiny inner ear structures, perform highly accurate measurements and create detailed computer models of the cochlea. The results are used in the development of new CI electrode delivery and implantation techniques.

All these image data are usually stored in a medical file format, so-called DICOM files, which can be viewed and evaluated on the computer using a DICOM viewer program. The usual representation of three-dimensional image data takes place in two-dimensional sectional views. To do this, the volume data set is cut through as a virtual slice and displayed. The section plane can usually be moved to display areas in front of or behind the current plane. This method of presentation is clinically established, but not optimal for the cochlea.

The cochlea winds as a spiral around its central bony axis, the modiolus, a form, that is unique among human organs. For many applications, it is ideal to align the section images to this axis. When using traditional DICOM viewers, it is cumbersome to establish this viewing plane and maintain it along the cochlea. For this reason, the research group Computer-Assisted Surgery at the ENT Clinic of the Hanover Medical School (MHH) is developing a DICOM viewer specifically for imaging and measuring



Representation of a cochlea (µCT/microscopically resolving computed tomography) in COMET in section images aligned to the axis

the cochlea in tomographic image data as part of the Cluster of Excellence Hearing4all: COMET (Cochlear Measu-rement Tool).

COMET displays the data set in a conventional view in which the user defines the central axis of the cochlea using two points. Once the axis is set, the images can be aligned with the cochlea. This produces radial, so-called midmodiolar, sectional images, in which the sectional plane runs along the axis, and a basal sectional image that is aligned at right angles to the axis, i.e. parallel to the plane of the basal turn of the cochlea. The sectional plane of the basal image can be moved in parallel, as with conventional programs. In the midmodiolar view, howe-ver, the section plane rotates around the axis and thus ensures that a midmodiolar aspect is always generated. Extensive measurements can be carried out in the ima-ges created in this way. First of all, two-dimensional measurement tools are available for measuring distances and angles. For example, the geometry of the cochlea, the position of an implanted electrode support at certain reference points or the insertion depth angle can be ex-amined. In addition, points in the image data can be set with which the course of the cochlea or an electrode car-rier can be marked, for example. For further use in other programs, the coordinates of the points can be exported to files.

If the points are set over the entire course of the cochlea, it is also possible to calculate their length in COMET. „In the future, this knowledge could be used in a clinical, preoperative application to individually select an electrode support of optimal length. This would be particularly advantageous for patients with short or long cochleae," explains Dr. Thomas Rau, who, together with Jakob Lexow, is responsible for the project. The points can also be used to outline areas of the cochlea such as the individual turns. This creates three-dimensional point clouds that can be used in computer-assisted design (CAD) software to create three-dimensional computer models. These models can be used, for example, to produce physical cochlear models for insertion tests in the development of new electrode supports. In addition, computer simulations of the mechanical processes in the cochlea can be carried out on the basis of the digital models. This makes it possible, for example, to investigate changes in the vibration of the basilar membrane under the influence of various (interference) factors and thus their influence on natural hearing.

COMET is thus an adapted tool for displaying and processing tomographic image data for research and possibly a future clinical application in connection with cochlear implants. A beta version of the software will soon be available for other scientists to download.

Oldenburg hearing researcher Dr. Kirsten Wagener receives the Meyer zu Gottesberge Award

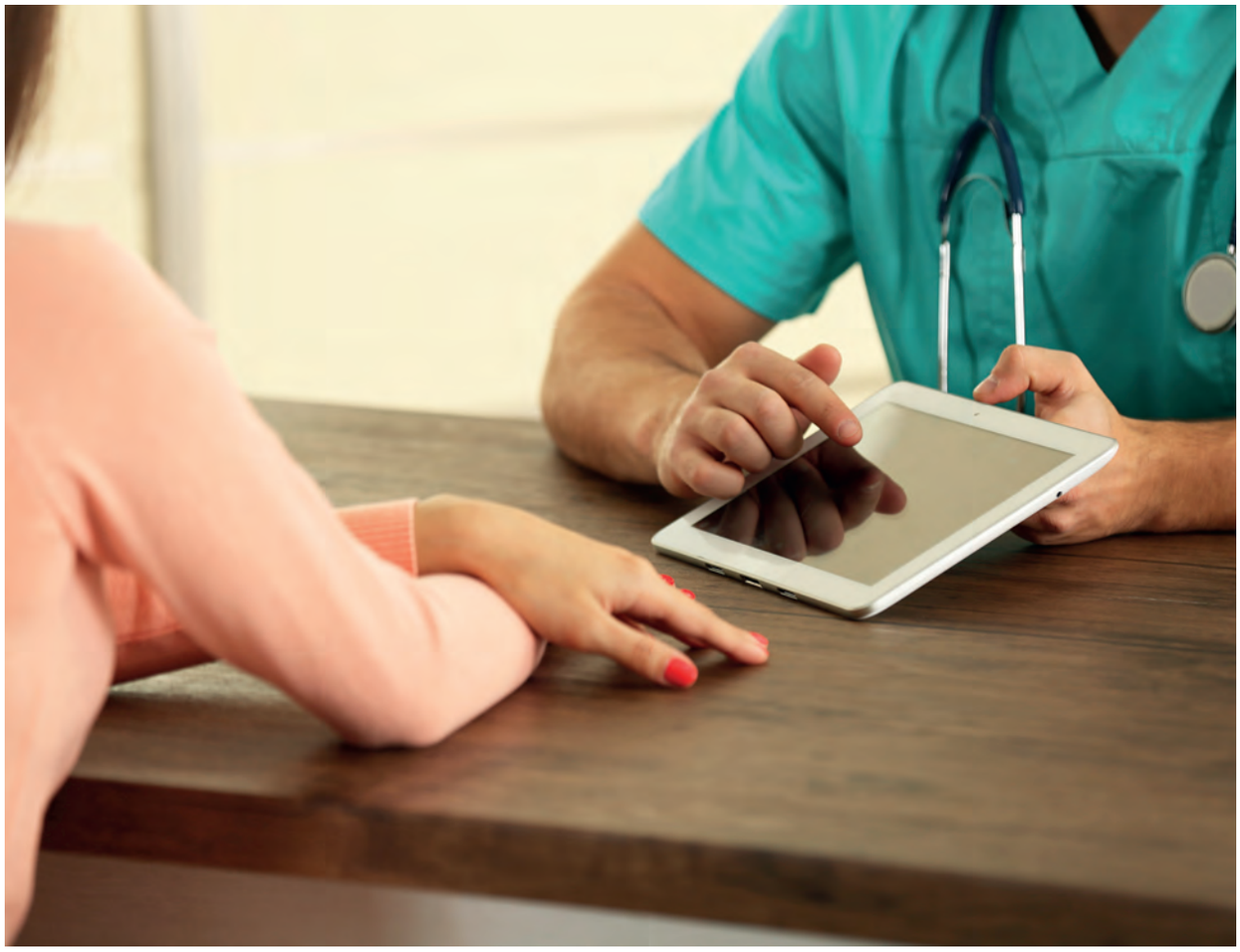
At the 21st Annual Conference of the German Society of Audiology in Halle (Saale), Oldenburg hearing researcher Dr. Kirsten Wagener was awarded the Meyer zu Gottesberge Prize. This is the highest honor the German Society of Audiology can bestow on an active researcher and occurs at the height of her creative power as the leading audiologist at Hörzentrum Oldenburg GmbH. In his laudation, the former supervisor, Prof. Dr. Dr. Birger Kollmeier of Carl von Ossietzky University Oldenburg, emphasized Wagener's rare ability to combine her industry-oriented job in applied hearing-aid research with continuous research and high-ranking publications. Dr. Kirsten Wagener's work in evaluating and improving the latest generations of hearing aids has left its mark on international hearing-aid technology. „I am very pleased to congratulate one of Germany's most distinguished audiologists for the Meyer zu Gottesberge Prize, which the German Society of Audiology awarded for her outstanding achievements in the field of hearing research," said Kollmeier at the award ceremony before an audience comprising the elite of German-language hearing research.

Dr. Kirsten Wagener, senior audiologist at Hörzentrum Oldenburg GmbH

The Oldenburg children's sentence test (OLKISA) is an audiometric test for determining the speech intelligibility threshold in quiet and in noise for children from the age of four.

Throughout her career Wagener has made pioneering contributions in various fields of audiology. Wagener is regarded as the „woman of the first hour," especially in the development of audiological measuring methods, such as the Oldenburg sentence test and the Oldenburg children's sentence test. Her work in the field of theory and hearing-aid system technology also made important contributions to understanding hearing loss and providing hearing aids. Speech intelligibility in noise plays a particularly important role in her work.

Dr. Kirsten Wagener graduated in physics from Carl von Ossietzky University Oldenburg in 1998. In 2003, she received her doctorate in the Department of Medical Physics on the subject of speech intelligibility in background noise. Since 2005, she has been working for Hörzentrum Oldenburg GmbH, where as a leading audiologist she has played a major role in the development of applied hearing-aid research in Oldenburg. As a consultant audiologist, Dr. Kirsten Wagener also supports HörTech gGmbH in the development of hearing-aid system technology.



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Clinical Innovation Centre KIZMO - Bringing medical technology to people

How should interfaces between humans and the technology in medical devices be designed? This is one of the core topics that the Clinical Innovation Centre for Medical Technology Oldenburg (KIZMO GmbH), founded in 2015, is dealing with. „Usability is becoming increasingly important for medical products," reports Dr. Michael Buschermöhle, Managing Director of the joint venture between the Evangelisches Krankenhaus and Hörzentrum Oldenburg. In order to improve usability, users of medical devices are involved at an early stage in planning and development. „Ultimately, by involving medical experts, we are pursuing an acceleration of the innovation process for the benefit of patients," Buschermöhle continues.

KIZMO GmbH is an industrial-inclinic platform funded by the German Federal Government (BMBF). In particular, the user-centreed development of product ideas and the medical aspects of the design of user interfaces are ta-ken into account. In addition to setting up the platform, some initial, small-scale projects have already been car-ried out. In February, the first multi-year project, THERE-SIAH (Digital Therapy System for individual pronunciation and hearing training for the hearing impaired) was laun-ched. The aim of the project is to develop a digital system for hearing and pronunciation training as a therapy for severely hearing impaired people after treatment with CIs or hearing aids. The system should make it possible for patients to independently perform exercises with a high training frequency, e.g., at home or away from clinical therapy times. At the same time, treating physicians and speech therapists are supported in (postoperative) clinical therapy by new objective diagnostic functions and by the logging of the course of therapy, which facilitates the evaluation.

The THERESIAH project is located in two of the three focus areas of KIZMO, namely phoniatrics and otorhinolaryngology. KIZMO GmbH is responsible for the user involvement of clinical personnel and acts as a bridge between the clinic and research. For this purpose, the development process is continuously accompanied by needs analysis of the users through to the development of the user interfaces and the evaluation and development of a concept for the integration into the therapeutic process. The THERESIAH project will run for three years. Further projects will follow shortly, in which KIZMO will also contribute its expertise in the field of human-machine interaction.

The microphone and audio technology of the Deutsche Telekom Smart Speaker was developed by the Fraunhofer Institute for Digital Media Technology IDMT in Oldenburg. The Speech Wizard also understands commands given from a distance, in noisy environments or when music is playing.

Fraunhofer IDMT develops audio technology for Deutsche Telekom's intelligent voice assistants

The audio technology for Deutsche Telekom's smart speaker was developed by the Fraunhofer IDMT in Oldenburg. The core of the work is the optimal interaction of loudspeakers and microphones for voice control, even under difficult ambient conditions. In addition, outstanding acoustics for telephony and music reproduction were created in a small housing. The intelligent assistant is intended to make everyday life easier through voice control and connected services.

Researchers at the Fraunhofer Institute for Digital Media Technology IDMT in Oldenburg make a special user experience possible with the audio design of Deutsche Telekom's smart speaker. With the development and combination of microphone technology and loudspeaker system technology, a very robust voice control was created even with simultaneous music enjoyment.

„The fact that we, as audio experts, were involved in the project from the very beginning was a great help to the overall result. With controllable directional microphones and measures to improve the signal for the recognition of voice commands, we have given the device an outstanding ‚hearing'. This is also very noticeable when making calls via the integrated hands-free function. With the audio design on the output side, we were able to develop and coordinate all the acoustic components so that we can produce excellent sound quality within the small dimensions," says Jan Wellmann, group leader for audio system technology at the Fraunhofer IDMT in Oldenburg. „The results of the Fraunhofer researchers from Oldenburg make us take notice: The Smart Speaker also understands voice commands from a distance, in loud environments or when music is playing," says Gunnar Mayer, project manager at Deutsche Telekom. „The acoustic design of the compact high-end stereo audio system with an output power of 25 watts and a combination of four highly sensitive microphones optimized for the highest possible precision in voice control make this possible," Mayer continues.

Many interfaces and high data protection

With the self-learning language assistant, networked devices can be operated in one's own home by voice. For example, Deutsche Telekom's choice of TV programs or smart home applications can be used without a remote control. It will also be possible to make phone calls. Further applications are available via cooperation partners such as the news program Tagesschau. Alexa users can also use the Smart Speaker to access a variety of applications from Amazon. In terms of data security, the Smart Speaker meets the highest requirements of German and European data-protection guidelines and thus stands out from the competition. Data processing takes place in Deutsche Telekom's high-performance data centres. The voice data is processed anonymously in the cloud and deleted after 30 days.

European Research Council (ERC) supports project on individual binaural diagnostics and technology

Humans have two ears - and for good reason: what is known as binaural hearing is not only crucial for localizing acoustic events, but also for focusing on a target sound while simultaneously suppressing background noise from other directions. In order to fulfil these tasks, neuronal circuits with the most precise processing in time have developed throughout the nervous system.

360 million people worldwide suffer from hearing loss. Although hearing aids and cochlear implants help to restore hearing, they cannot restore natural binaural hearing.

The project „Individualized Binaural Diagnostics and Technology (IBiDT), ERC-Starting Grant" led by Prof. Dr. Mathias Dietz at the University of Oldenburg will change this situation. By taking into account the individual nature of each hearing deficit, not only the symptoms of perception but also pathologies are diagnosed. IBiDT proposes algorithms tailored to the individual, detailed patient profile and offers therapeutic interventions tailored to the individual hearing situation. In order to achieve these goals, a multi-stage and multidisciplinary approach is pursued. The focus is on a computer model that simulates the impaired hearing system and can confirm or reject diagnoses of individual pathology. Once the diagnosis is made and confirmed, the computer model helps to select suitable algorithms for hearing aids and cochlear implants that are specifically tailored to the individual hearing profile. Binaural hearing is an ideal conceptual framework to investigate this approach, as it greatly increases the number of possible targetable pathologies compared to unilateral diagnostics. The binaural auditory pathway is also ideal for study, as it allows a great improvement in hearing performance.

Despite significant R&D spending, the performance of cochlear implants has remained at a constant level over the past 15 years, at least with regard to unilateral devices. Improvements through individualized binaural diagnostics and technology will have a major, positive impact on the growing number of bilateral cochlear implant users (many of them children) and on the many millions of people who use hearing aids.

The European Research Council (ERC) is an institution established by the European Commission to promote basic research. The funding procedure is characterised by two principles: Excellence as the sole eligibility criterion and an independent and transparent peer review process. The ERC-Starting Grant is aimed at young scientists with promising research potential. Researchers whose doctorate was awarded between two and maximum of seven years (in exceptional cases longer) before the call for proposals are eligible to apply.

Garbsener Freundeskreis awards Ehrenring to Prof. Dr. Ingeborg Hochmair from MED-EL

Top-class laudators, excellent music and more than 200 guests: At a ceremony at the end of last year, the Garbsener Freundeskreis awarded the Ehrenring to Dr. Ingeborg Hochmair, thereby honouring an outstanding scientist and entrepreneur in hearing research. Together with her husband Erwin Hochmair, she developed a cochlear implant in the mid-1970s to enable highly hearing impaired or deaf people to hear again, and founded the medical technology company MED-EL almost 30 years ago. Today, the company employs around 1,800 people wor-ldwide and offers numerous hearing systems for middle ear hearing loss - and cochlear implants.

„Ingeborg Hochmair is not only an outstanding scientist. She has managed to combine the advancement of research, the successful management of a company and a harmonious family life with four children," said laudator Professor Thomas Lenarz, Director of the ENT Clinic at the Hannover Medical School and himself holder of the Garb-sener Ehrenring. Hochmair was particularly moved by the greeting by Professor Jörg Wallaschek, Dean of the Faculty of Mechanical Engineering at Leibniz Universität Hannover, who in his speech recalled Hochmair's father Kurt Desoyer, whom Wallaschek had met personally. The Hanover Cochlear Implant Society was also represented: Consultant Joachim Neumann gave a greeting: „Ingeborg Hochmair's research makes life worth living," said Neumann. The highlight of the event was the presentation of the honorary ring by Stefan Birkner, chairman of the Garbsener Freundeskreis and group leader of the FDP in the Lower Saxony state parliament, and Professor Heinz Haferkamp, emeritus university professor at Leibniz Universität Hannover and active on the board of the Garbsener Freundeskreis since 1996.

Hochmair thanked her colleagues, the research group around Professor Lenarz, and her family. And she revealed an ambitious and important goal: „Together we aim to be able to provide all deaf children with a cochlear implant by 2025," said Hochmair.

Stefan Birkner (left), Chairman of the Garbsener Freundeskreises, and Professor Heinz Haferkamp, Professor emeritus at Leibniz Universität Hannover, hand over the Ehrenring to Prof. Dr. Ingeborg Hochmair.

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Forum Office Acoustics is partner of the „Quiet please!“ campaign

FORUM OFFICE ACOUSTICS
IM AUDITORY VALLEY

Communication kills concentration: In many offices, people wish for the walls they once removed long ago to be returned, because room acoustics have often deteriorated so much that productivity suffers. The „Quiet please!“ campaign offers help.

In recent years, the topic of „acoustics in office environments“ has become increasingly important. The trend towards office concepts that promote communication and collaboration, above all open-space landscapes, has frequently led to problems caused by acoustic disturbance. As a result of these distractions, many office workers can hardly work in a concentrated manner. Stress and error rates increase; well-being and productivity decrease. Scientific research has confirmed that poor room acoustics cause high losses in performance.

Good advice asked

Despite some efforts - such as the annual „Day against Noise“ since 2007 or the new version of DIN 18041 in 2016 - the importance of acoustics in the office has not yet penetrated far enough into the consciousness of those responsible and affected. However, more and more companies are now realising the importance of the topic of acoustics. This is why the German Institute for Modern Office Work, DIMBA, which is part of the Frank Nehring publishing house, launched a campaign at the end of 2017 in which competent and committed partners work together to improve acoustics in office environments and beyond.

Strong partners

Among many others, Forum Office Acoustics is also a partner in the campaign that was launched at the beginning of 2018. Under the motto „Together for better acoustics in offices“, the companies BARRISOL -NORMALU SAS, Carpet Concept ObjektTeppichboden GmbH, CRÉATION BAUMANN AG, REHAU AG+ Co, Strähle Raum-Systeme GmbH and USM Möbelbausysteme GmbH joined forces in the Forum Office Acoustics in January 2014. Whether acoustically effective carpets, wall and ceiling coverings, fabrics, furniture or partition walls - the consortium covers the entire spectrum of acoustically optimised room furnishings. Under the direction of manufacturer-independent acoustics experts Dr. Christan Nocke (Akustikbüro Oldenburg) and Dr. Markus Meis (Hörzentrum Oldenburg GmbH), the holistic approach facilitates the planning of acoustically optimised office space for employers, facility managers, builders and architects. The Forum Office Acoustics also offers manufacturer-independent information events and further training on current topics in office acoustics, such as the currently discussed draft of the VDI 2569 guideline „Sound insulation and acoustic design in the office“.

www.forum-office-acoustics.de

New Bachelor's Programme in Speech Therapy

Green light from the responsible ministry: The new bachelor's degree course in speech therapy, with 35 students, will start in the winter semester 2019/2020 at the „Technik und Gesundheit für Menschen" (TGM) Department of Jade University. The vocational school for speech therapy Oldenburg of the AWO is an important practical partner. The existing cooperation is now being systematically expanded.

„Our speech therapy course qualifies students for the upcoming challenges in health care," says Dr. Karsten Plotz, professor at Jade University and senior physician at the Protestant Hospital. „And academization forms the basis for the further development of methods and instruments of speech therapy". A technical focus is set, for example, in computational linguistics.

The future students will attend joint courses with the students of the two established Bachelor's degree courses „Hearing Technology and Audiology" and „Assistive Technology". This is part of the innovative training concept of the teaching unit, which wants to closely interlink training in engineering sciences and health professions, including in joint projects.

This cross-professional learning at Jade University provides an attractive, forward-looking teaching and research environment. It qualifies graduates for jobs in an interprofessional team.

Applications will be accepted from summer 2019 at the earliest.

https://ecampus.jade-hs.de

Concerts in the „Haus des Hörens"

With the „Haus des Hörens", a vision has become reality: A European centre for hearing research that combines basic research with the development and fitting of hearing aids, a centre of common action for the benefit of all hearing-impaired people. The building, which opened in 2002, offers excellent working conditions for the scientists. In addition to the nine acoustic measuring rooms, the communication acoustics simulator (KAS) is a high-light of the building. By means of a sophisticated tech-nology, consisting of numerous microphones and lou-dspeakers as well as elaborate electronics, almost any room can be acoustically simulated in the KAS.

Good hearing and understanding are important for the quality of life. Our most active sense organ - hearing - is crucial for communication, orientation and safety. Ne-vertheless, hearing is often regarded as a second-class sense. That is why it is important for the institutions in the House of Hearing to make their research focus acces-sible to the public. With concerts in the communication acoustic simulator, among other things, the facility, which is unique in Germany, offers the interested public a vivid and experience-oriented insight into the complex world of hearing. All concerts take place in the Communication Acoustics Simulator (KAS) in the „Haus des Hörens". This unique space in the heart of Oldenburg takes the audience to the largest concert halls in the world. Whether cathedral, concert hall or station concourse - using sophisticated technology, the KAS can simulate almost any room acoustically. Speaker voices, music and any other kind of sound generated in the room are picked up by the numerous microphones in the ceiling and directed into the heart of the KAS, the electro-acoustic control system. It can be used to change these acoustic signals in a targeted manner or to add further virtual sources, which can then be fed back into the presentation room via the loudspeakers in the walls and ceiling. The communication acoustic simulator received an award in 2008 in the competition „Excellent Landmarks in the Land of Ideas". In 2018, the association will again cooperate with „klangpol", the network for new music in the northwest, which wants to „open many ears to new sounds, new tones". We think: the KAS is the ideal place for this!

The concerts are organized by the Förderverein Haus des Hörens e.V. Current dates and an access to the live stream, with which you can follow the concerts everywhere, can be found at www.hausdeshoerens-oldenburg.de

NHS Nordwest screening centre expands catchment area

The early detection of hearing loss in early childhood is one of the most important tasks of preventive medicine. The Oldenburg screening centre NHS Nordwest is a joint project of birth centres and specialist medical follow-up centres in Oldenburg and Lower Saxony. Located at the Hearing Centre Oldenburg, the screening centre NHS Nordwest coordinates the cooperation of maternity clinic, registered doctors and parents and is thus a central player in the early detection and treatment of hearing impairment. At the beginning of 2018, the Klinikum Braunschweig also joined the NHS Nordwest screening centre. The number of children cared for by the screening centre increased by 2200 to a total of 6700.

In Germany, one or two of 1000 children are born with severely impaired hearing. If a hearing disorder is detected very early, modern hearing system technology and early support can make it much easier for the child to get started in life. Since the beginning of 2009, parents have had the right to have their newborn babies undergo a hearing test, the so-called newborn hearing screening. The earlier the hearing loss is diagnosed and treated, the better the children can be helped. Early diagnosis covers the period from birth to the 6th month of life. At this point in time, the sensitive phase of hearing begins, which is already over at 1.5 years of age. If, within this time window, a child with a profound hearing disorder already has a targeted technical care (CI) and early pedagogical support, the child has a good chance of developing speech, which promotes the child's cognitive, emotional and social development. It is therefore imperative to diagnose severe hearing disorders in the first year of life.

In addition to the statutory newborn hearing screening, the Oldenburg clinics, the Ammerlandklinik Westerstede, the Heliosklinik Wesermarsch and the Klinikum Braunschweig offer further care by the NHS Nordwest screening centre. Ultimately, only cooperation with a screening centre can ensure that all children are recorded and measured.

The parents of infants tested as „in need of control" are reminded of the necessary control measurements by the NHS Nordwest screening centre. If the results are not clear, the screening centre will contact the parents again to clarify the status of the measurements. Tracking will continue until a final result is achieved. If a hearing loss is detected, the screening centre NHS Nordwest accompanies parents and children on their first steps towards hearing system care and early intervention.

In addition, the screening centre informs interested parents about the newborn hearing screening and is available as a competent contact.

Further information can be found at
www.nhs-nordwest.de

Oldenburg conducts research for the international hearing-aid industry

A research team led by Prof. Dr. Hans Colonius, Department of Psychology and Cluster of Excellence „Hearing-4all“ at Carl von Ossietzky University Oldenburg, has been awarded the contract for a tender of the international hearing-aid industry. The Hearing Industry Research Consortium (IRC) is an association of the six largest hearing instrument manufacturers, which together cover over 80% of the world market. Each year, the consortium supports one or two pre-competitive research projects that serve a common interest of the manufacturers. The goals are to increase the benefits for the hearing-aid wearer, support for the hearing care professional and pre-competitive developments for the hearing-aid industry.

In the 2017 call for proposals focusing on „Effects of audiovisual integration on acoustic communication among hearing impaired people“, the Oldenburg hearing researchers prevailed among 17 outstanding proposals from leading universities and research institutions around the world. Colonius and his team, Maike Tahden and Anja Gieseler, as well as Prof. Christiane Thiel and Dr. Stephanie Rosemann, will investigate in their research how the use of hearing aids influences audiovisual integration, speech perception, cognitive performance and neuronal connectivity in slightly-to-moderately hearing impaired elderly people.

Prof. Dr. Hans Colonius, Department of Psychology and Cluster of Excellence „Hearing4all“ of Carl von Ossietzky University Oldenburg

„We are very pleased that we can continue our work and finally realize the project we have planned in recent years,“ said Prof. Colonius, „in which we want to investigate the causal relationships between audiovisual integration, hearing-aid use and speech understanding in a longitudinal study."

We are delighted that the so-called „IRC Grant“ comes to Oldenburg for the second year in a row. In the 2016 com-petition, the team led by Prof. Dr. Inga Holube and Prof. Dr. Jörg Bitzer from Jade University and Dr. Markus Meis from the Oldenburg Hearing Centre also scored points. Over the course of two years, measurement methods were established and further developed with which communi-cation in everyday situations and the associated quali-ty of life can be individually recorded. With the help of a smartphone-based system and individual observations, difficult hearing situations can be identified and the im-provement of communication skills through hearing aids examined.

The team of Anu Sharma, Professor in the Department of Speech Language Hearing Sciences at the Institute of Cognitive Science, and at the Center for Neuroscience at the University of Colorado, Boulder, was also successful in the 2017 competition round. Her work focuses on changes in intermodal neuroplasticity and audiovisual processing in age-related hearing loss, whether intervention with hearing aids restore audiovisual integration, and also examines the underlying cortical networks.

Sridhar Kalluri, Chairman of IRC 2017-2018, stated in the press release: „The IRC is pleased to have received so many excellent proposals from leading researchers around the world. We know that the preparation of such applications requires a great effort and we would like to sincerely thank all applicants for their contribution."

Teaches the tools of a sound engineer at Jade University: Grammy winner and honorary professor Michael Brammann. Photo: Piet Meyer/ Jade HS

Grammy winner Michael Brammann appointed honorary professor

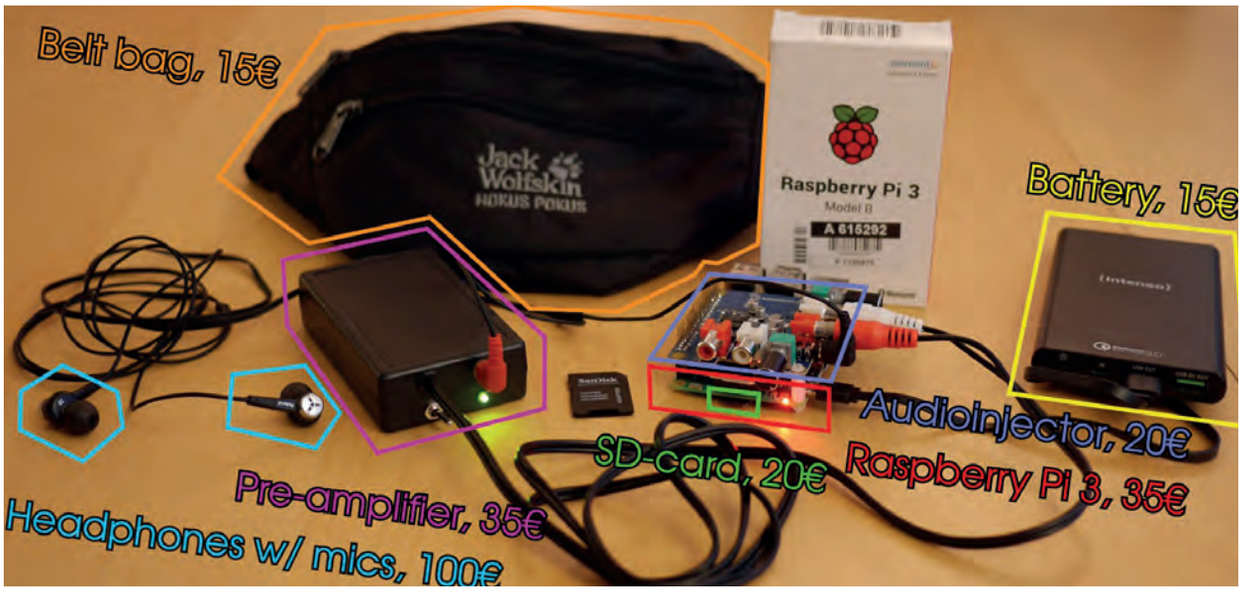
Michael Brammann has now been appointed honorary professor at Jade University of Applied Science. The sound engineer has been a lecturer in studio technology at the Institute for Hearing Technology and Audiology at Jade University since 2003 – and a two-time Grammy winner.

Brammann was responsible for the sound recording and mixing of over a thousand LP and CD releases. The sound engineer's greatest success is the more than 30 years of collaboration with the conductor Nikolaus Harnoncourt. The results of this work have received several awards, including the Grammophone Award and Grammy 2002, and another Grammy was added in 2007 – this time with a Russian orchestra under Yuri Bashmet.

At Jade University at the Institute of Audio Engineering and Audiology, Michael Brammann sees the focus of his work in teaching students the cultural and technical as-pects of audio recording and giving them the „tools" of a sound engineer. The practical relevance is particularly important to him. For example, he initiated a long-stan-ding collaboration with the Oldenburg State Theatre.

Michael Brammann is passionate about his work. „I consider it a privilege to work with wonderful artists to realize a valuable product," says Brammann. Furthermore, his work as a sound engineer offers him the chance to travel: He has worked on almost all continents, travelling to the USA about 60 times for sound recordings and several times to China, Russia and Venezuela.
His work at Jade University also continues to fascinate him: „I experience Jade University as a very special place, with a working atmosphere that is probably unparalleled in the free economy. The reasons for this are the extraordinary personalities among the teachers and the committed students".

In a ceremony in December, university president Prof. Dr. Manfred Weisensee awarded the honorary professorship. Prof. Dr. Hero Weber, Chairman of the Commission for the Examination of Requirements, praised the achievements of Michael Brammann with the words: „With Michael Brammann we are honoring a personality who, through his outstanding achievements, coupled with superb musicality and admirable empathy is recognized throughout the professional world „.



Hear How You Like to Hear!

Self-determined hearing for people with and without hearing impairment: Although more than half of the population over 65 years of age is affected by hearing impairment, only a quarter of these people use hearing aids. The Fraunhofer Institute for Digital Media Technology IDMT's research project will involve interdisciplinary teams of citizens, scientists, artists and market makers researching how hearing aids for self-determined hearing should look, listen and feel, so that they can help people with hearing loss in everyday situations.

Together with scientists, citizens are researching portable hearing aids, so-called „Hearables", which can be freely designed both in sound and appearance. Hearables are intelligent devices that are worn on the body and primarily serve for hearing. Examples include Bluetooth headsets, in-ear monitors for musicians, and hearing aids. Current developments integrate sensors such as motion meters and pulse oximeters, which can provide smart analyses and predictions with the aid of algorithms. This project focuses on consumer products. How can they be improved or redesigned in terms of user-friendliness? Hearing aids and medical devices are not the subject of the project, although results from the project could also be of interest for these applications.

How can citizens participate in research?

Citizens with and without hearing impairment can participate in two ways:

1. Interested parties with and without hearing impairment test Hearables at joint meetings.
2. Stake holders and experts create new ideas for design and applications

From March 2018 to August 2019, the Hearable testers are asked to adapt portable minicomputers to their ideas of euphony. They meet people with and without hearing impairment in everyday environments, for example in restaurants, at conferences, in the opera and at rock concerts, or in parks and public transport.

Those affected by hearing loss, those simply interested, and experts from the fields of art, sound and design, science, and IT development can take part in a hearable hackathon in July 2018. At this two-day event, mixed teams will be formed to develop ideas for hearables in material, user interfaces and design. There are no limits to imagination: Participants decide whether new ideas will be based on the design of modern headsets, futuristic antennas or historical hearing aids, for example.

„With our funding, we are strengthening cooperation between citizens and scientists," emphasised Federal Research Minister Johanna Wanka in the press release published at the start of the project last year. „The projects are intended to improve citizens' research and advance it methodologically - and develop answers to socially important questions."

Interested citizens work in a team with the scientists to implement a selection of the design drafts created as a hearable in the new design. The test persons support the development stages with everyday tests.

During a second Hackathon in May 2019, the IDMT is looking for creative ideas for the Hearable exhibition the following year. In addition to the presentation of the new Hearables, the exhibition is also intended to provide information and make hearing impairment sensorily tangible through artistic contributions. Affected people and experts from the fields of art, music and design, science and IT development are also invited to participate in this hackathon.

What happens to the results?

- The IDMT publishes the wishes and experiences of the Hearable test persons gathered in the project. We use the project website of the Fraunhofer IDMT in Oldenburg, and the existing network to Cyborg e.V. and Citizen Science - platforms such as „Citizens Create Knowledge".
- The IDMT invites interested parties and experts to a public dialogue on Twitter and Facebook and they discuss the project's results at events at which creative people from design and technology meet, such as Maker Fair and re:publica.
- In a concluding exhibition, the IDMT will present the newly developed Hearable and the design ideas developed during the Hackathon. They will also show artistic exhibits and organise events on the subject of listening perception.

What does research contribute to?

"Hear What You Like To Hear" is the first time that citizens are involved in research into hearing aids. In this way, they are creating a new area of civic research in which the perspectives of people with hearing impairments are directly integrated into science:

- Citizens are given room to design their own technology in accordance with today's possibilities.
- The independent fitting of the hearing aids by the users increases understanding of the functionality of a hearing aid.
- The handling of the algorithms makes it clear to users that a Hearable is high-tech on the ear in the truest sense of the word.
- Today's systems and supply channels are critically reflected on by users and scientists together.

Support:

The project is funded by the Federal Ministry of Education and Research as part of the Citizen's Research funding area. It is one of 13 projects that are to advance the cooperation between citizens and scientists in terms of content and methodology, and provide answers to social challenges by the end of 2019.

Further information at: https://www.bmbf.de/de/mitmachen-und-forschen-4503.html and http://www.buerger-schaffenwissen.de/

openMHA –

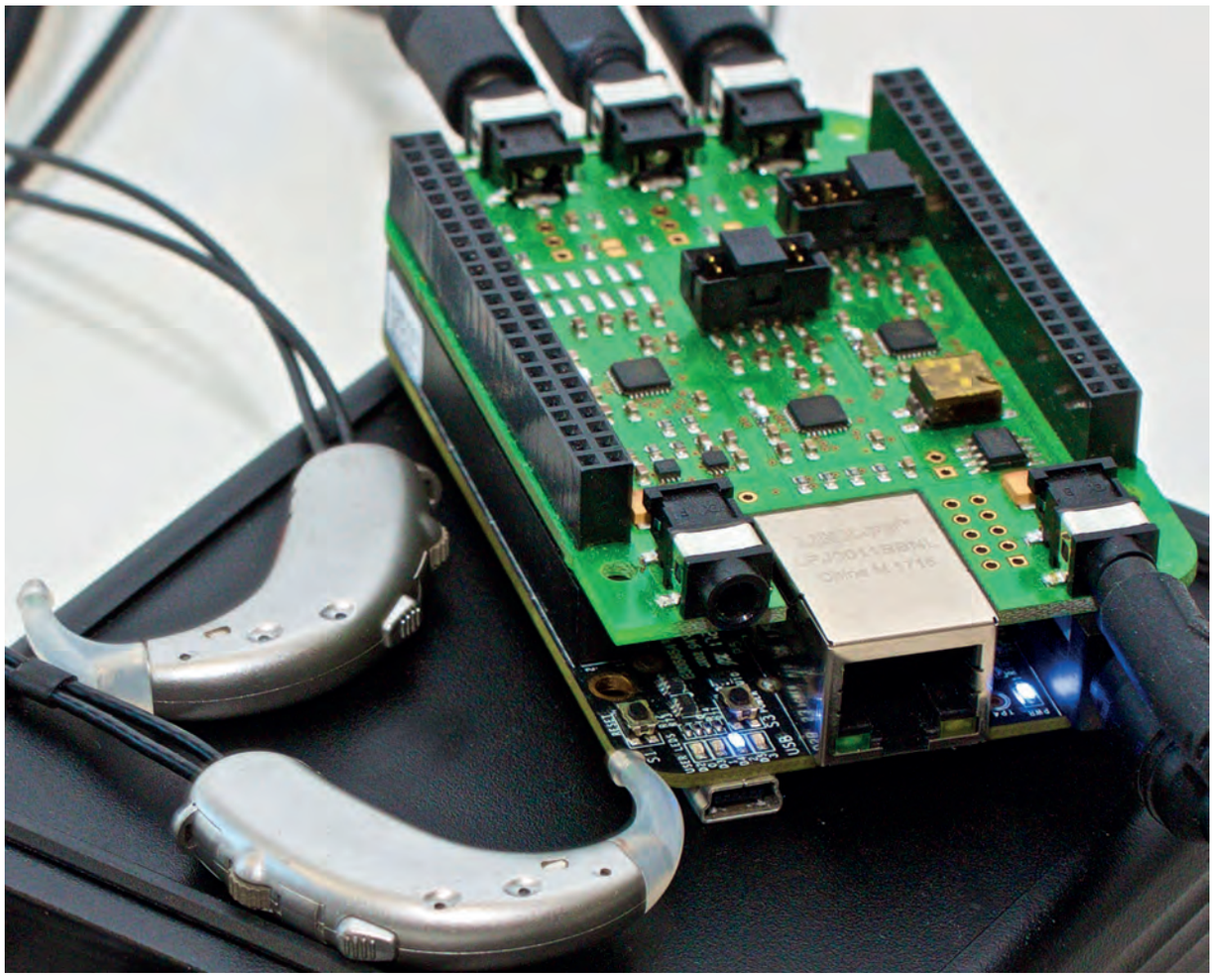
an open source platform for real-time hearing-aid software development

Hearing aids improve the quality of life of millions of people in Germany. However, there is still a lot of potential for improvement, especially in acoustically difficult situations.

Despite differences in performance, size and optics, modern digital hearing aids all function according to the same fundamental principle: sound is first converted into electrical signals via a microphone, then digitized. A processor chip analyzes and processes the digital signals using so-called signal processing algorithms. These provide signal amplification, noise suppression, directional filtering and feedback suppression. The signals are then converted back into sound and played via a loudspeaker in the ear canal.

In order to further increase the performance of hearing aids, new and more powerful algorithms are continuously being developed. When testing a new algorithm, it is important to evaluate the new algorithm under realistic conditions. An algorithm - for example for noise suppression - can work excellently in the isolation of a laboratory, but when combined with realistic signal processing in a hearing aid, interactions can occur that reduce or even completely negate its benefits.

HörTech gGmbH has developed the Master Hearing Aid (MHA) software platform, which provides exactly such realistic processing as a „research hearing aid“. Developed mainly by Giso Grimm and Tobias Herzke, the MHA can process audio signals in real time with a short delay between input and output. This software platform is now - as part of a project sponsored by the US National Institutes of Health (NIH) under the direction of Prof. Dr. Volker Hohmann - made available free of charge under an open source license as a platform for real-time hearing-aid software development for research and development purposes. „The openMHA is intended as a common platform that can be used by various hearing-aid research laboratories to bundle their work. By providing a solid base platform, we want to encourage researchers to implement and publish their algorithms as MHA plug-ins so that the work can be shared and the results reproduced by independent laboratories,“ explains Dr. Hendrik Kayser, postdoc in the project at Oldenburg University. By providing a software platform that runs on all types of hardware, openMHA creates the basis for connecting laboratory and reality. If the openMHA is executed on a mobile computer that is carried by test persons, testing new algorithms in real situations becomes possible for the first time. The openMHA is currently in use in Germany, Sweden, the USA and Canada. Based on feedback from these newly acquired international users, further releases are planned this year that will improve the user-friendliness and usability of openMHA. Among other things, there will be support for the Windows operating system and new graphical wizards for calibrating measurements with the openMHA.



New hardware for research hearing aids

Hearing4all researchers develop mobile hardware

Modern single-board computers now offer enough computing power to perform real-time audio signal processing on them. Their low power consumption and compact size make them suitable for mobile operation and, last but not least, their low acquisition costs make them suitable for a wide range of applications in research in the hearing-aid sector. In addition, interested parties outside research can also be introduced to this area (see article „Hear how you like to hear" on page 18).

One difficulty in using these universally applicable systems, which specialize in audio signal processing, is the low availability of suitable additional hardware with multi-channel audio inputs and outputsthat would be suitable for processing with short latency.

As part of the Cluster of Excellence Hearing4all, a team from the Institute of Microelectronic Systems at LUH has now developed a special extension for the „Beaglebone Black" platform. This so-called Cape4all (see picture) supports 6 input and 4 output channels and offers an integrated power supply and amplifier for the microphones. Together with the software platform openMHA (see left side), this hardware system forms a flexible and portable research device for the evaluation and development of new methods for digital signal processing in hearing aids. Just like the openMHA software, the Cape4all hardware design is open source, so that every user can copy it, pass it on and even adapt the design themself. For more information, see

https://github.com/HoerTech-gGmbH/Cape4all

Marc René Schädler new junior professor for speech processing and perception modelling

Dr. Marc René Schädler has been appointed Junior Professor for speech processing and perception modelling at the Department of Medical Physics and Acoustics at the University of Oldenburg. Before that, he was a post-doctoral fellow in the Cluster of Excellence "Hearing4all" at the university.

Prof. Dr. Marc René Schädler, junior professor for speech processing and perception modelling

Schädler studied physics at the University of Oldenburg. He then worked as a research fellow in the Collaborative Research Centre „Active Hearing“ funded by the German Research Foundation (DFG). Study and research visits took him to Zaragoza and Barcelona (Spain). In 2015 Schädler received his doctorate on automatic speech recognition in the research group of physicist and phy-sician Prof. Dr. Dr. Birger Kollmeier. In the same year, he became a postdoctoral fellow in the Cluster of Excellence "Hearing4all". Schädler‘s research is dedicated to hearing and the perception of language. He develops algorithms to improve machine hearing - for example, for automatic speech recognition. In addition, the physicist is using the same technology to develop models of hearing and hea-ring loss in order to understand human hearing and help people with hearing loss to recognize speech.

Most wanted:
Hearing4all article is featured by Physics today and was the most read article in the Journal of the Acoustical Society of America

The reception of published articles is a central success factor for every scientist and every research project. It is therefore all the more pleasing that the article „Modeling speech localization, talker identification, and word recognition in a multi-talker setting“ published by Josupeit and Hohmann in the Cluster of Excellence Hearing4all has met with a great response and is currently sponsored by Physics Today and was also one of the most widely read articles in the Journal of the Acoustical Society of Ameri-ca in August 2017.

This study presents a model for solving three different auditory tasks in a multi-talker environment: Target localization, target identification and word recognition. The model was used to simulate psychoacoustic data from a call-sign based hearing test with several spatially separated speakers [Brungart und Simpson (2007). Wahrnehmung. Psychophys. 69 (1), 79-91]. The main characteristics of the model are (i) the extraction of prominent auditory features („glances“) from the multi-talker signal and (ii) the use of a classification method that finds the best target hypothesis by comparing feature templates from a clean target. The four characteristics used were periodic energy and periodicity based interaural time and level differences. The model results largely exceeded the probability of chance for all subtasks and conditions and generally strongly coincided with the subject data. This suggests that, despite their scarcity, insights provide sufficient information about a complex auditory scene. This also suggests that complex source overlay models may not be required for auditory scene analysis. Instead, simple models of clean speech can suffice to decode even complex multi-talker scenes.

On the way to fully implantable hearing solutions: H4A researchers uncover energy-saving potential

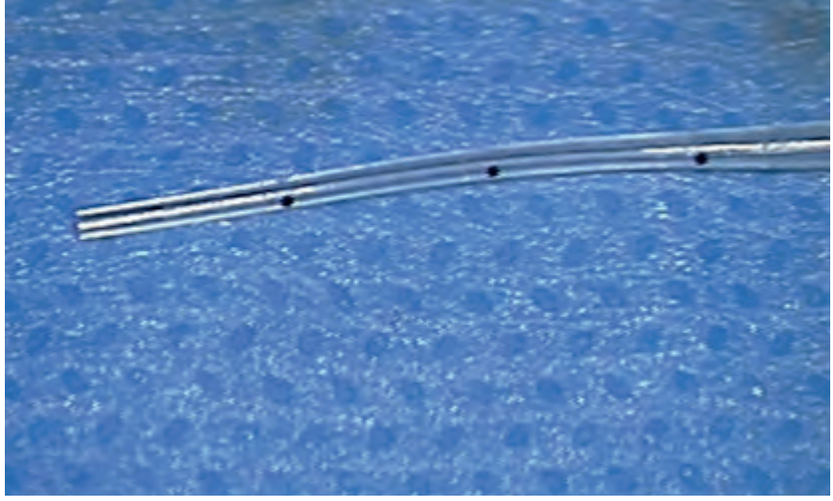
Hearing aids and cochlear implants (CI) have helped thousands of people regain their hearing, understand speech and cope with the environment and everyday life. Research and development has greatly improved the wearing comfort of both types of devices over the past few years and has developed extremely small versions, especially of hearing aids. Cochlear implants, which generally require more current to stimulate the auditory nerve, are slowly moving into the dimensions of hearing aids with each new generation of speech processors. But the motivation to make the devices even smaller and to enable long battery life remains high.

While battery manufacturers are trying to develop more effective and longer-lasting products, and hearing-aid and CI manufacturers are working to accommodate their chips in the smallest possible space, the Auditory Pros-tethics Group (APG) at the Hannover Medical School un-der the leadership of Prof. Dr. Waldo Nogueira is trying to tackle the problem from another angle: CI has so-called coding strategies that convert the acoustic sound recor-ded by the microphone into an electrical pattern, which in turn indicates when and where the auditory nerve is to be stimulated. A coding strategy can generally be seen as a translator from the acoustic to the electrical level. Each manufacturer works with its own coding strategy that is usually tailored to the hardware (the electrode array in the cochlea). Research groups such as APG can test new forms of these coding strategies via different computer interfaces and. in collaboration with study participants, evaluate their effectiveness. This is usually done with regard to speech understanding (the usual focus for hearing aids), battery performance and general hearing impression.

In early 2017, Langner et al (Hear. Res. 2017) investiga-ted various coding strategies under these aspects and were able to gain interesting insights: While in many commercial coding strategies a sequential stimulation of the auditory nerve is carried out (no current sources are activated simultaneously, but one after the other), a si-multaneous stimulation with another current source can bring some advantages. Sounds were then perceived as being louder, as two power sources are present and inter-act. This means that the current required to stimulate the auditory nerve must be reduced and the energy-saving potential is increased. On average, study participants saved 25% of power compared to regular sequential stimulation. The other advantage was that the hearing performance in speech intelligibility did not suffer and the simultaneous stimulation of the auditory nerve could be described as a good middle way between performance and energy saving.

An important aspect to consider when adapting these coding strategies is loudness. Loudness is the subjective perception of the intensity of a sound event and strongly linked to the level of the electrical current during auditory nerve stimulation. One of APG's current research activities deals with the prediction of loudness in CI carriers, in order to be able to make statements about the energy-saving potential. The so-called loudness model, which can predict the intensity/loudness of different sounds, could be used both for automated adaptation of coding strategies and for the evaluation of new types of strategies with regard to energy-saving potential. If coding strategies can be effectively compared, the speed of research can be boosted and new ways of stimulation discovered. This would enable the goal of a fully implantable hearing solution to be reached more quickly and the stigma of a hearing aid would be avoided.

Prof. Dr. Waldo Nogueira, Assistant Professor for Auditory Prosthetics at the Hanover Medical School

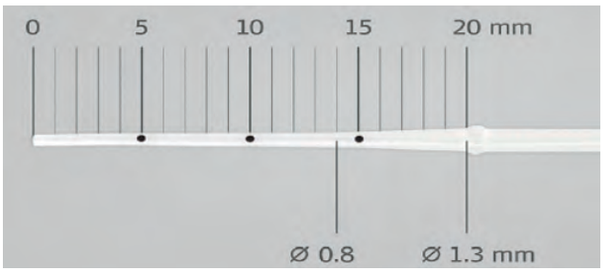


Intracochlear drug application via the cochlear catheter

Our modern society relies increasingly on information technology and the associated electronic aids. This is a particular burden for our hearing system. It is therefore not surprising that more than 360 million people worldwide suffer from a hearing loss that is severely impairing. This increasing number of hearing-impaired patients poses an enormous challenge to our healthcare system.
Medicines that adequately protect our hearing or stabilize it after damage are currently under development. Medications that improve hearing in cochlear implants are also desirable.

Since the inner ear is a self-contained organ system, it is particularly suitable for the local administration of drugs. Compared to systemic administration, local administration is particularly advantageous for substances that have adverse effects outside the ear, have a narrow therapeutic width, have relevant first-pass effects, and for particularly costly active ingredients. Intracochlear administration, i.e. direct administration into the cochlea, is an attractive way to better estimate the dose that reaches the inner ear. Intracochlear application also ensures the distribution of the substances into deeper regions of the cochlea. A catheter that has been specially shaped and manufactured for intracochlear application has already been tested in basic experiments and found to be suitable for reaching areas of the cochlea beyond the base.

Pharmacotherapy, in combination with cochlear implantation, should not only protect hearing, but reduce both the insertion trauma and the associated inflammatory reaction, and also prevent fibrosis or even ossification of the cochlea. Intracochlear drug application can also be considered to protect the hearing of patients who have residual hearing prior to surgery. In particular, more apical regions of the cochlea must be reached pharmacologically, since the residual hearing is usually located in the low frequencies and thus apically. In addition, the inner ear consists of various liquid-filled spaces in which there is almost no circulation, making the liquids virtually stationary.
A cochlear catheter, which was developed in cooperation with an industrial partner, has already been used at the Hannover Medical School (MHH) to treat several patients during cochlear implantation. A reduction in impedance even in the deeper areas of the cochlea shows that local drug delivery via the cochlear catheter is possible in regions up to 20 mm deep in the cochlea. This corresponds to the region which serves the perception of approx. 1kHz and is often still present in the residual hearing. Lower-frequency regions of the cochlea cannot be reached with the current design and the limited catheter length of 20 mm, or can be reached only by diffusion. The initial results not only showed that the catheter can be safely used during cochlear implantation, but that it can also



achieve the desired effects.
In a further step, the patient's own precursor and stem cells were administered through the catheter into the inner ear. Similar to cortisone, the cells are to be used to better prepare the environment in the cochlea for implantation and the associated trauma and to support the healing processes. „Initial results are promising. Thus, the cochlear catheter offers an opportunity to introduce specific drugs into the cochlea without significant amounts entering the circulation and causing adverse effects in the body," explains Dr. Athanasia Warnecke, who is supervising the project together with Dr. Nils Prenzler.

How does hearing loss or hearing-aid use affect the experience of music? Dr. Kai Siedenburg uses the Carl von Ossietzky Researchers' Fellowship to investigate this question.

Hearing researcher Kai Siedenburg receives Ossietzky Fellowship

How does hearing loss affect the experience of music? For his research at the interface between signal processing and music psychology, hearing researcher Dr. Kai Siedenburg has received a three-year „Carl von Ossietzky Researchers' Fellowship" from Oldenburg University. The 32-year-old has been working in the Department of Medical Physics and Acoustics since the end of 2015 and will now use the fellowship to raise funds for his future research, for example in his own junior research group. Prof. Dr. Martin Holthaus, Vice President for Research and Transfer at the University, presented him with the funding certificate.

„With our university fellowship, it is important to us once again to honour and support an outstanding and highly qualified young researcher on his further path," said Holthaus. The research topic of Kai Siedenburg concerns many people: „Not only every second person over 65 years of age, but increasingly many younger people suffer from hearing loss - and do not want to do without the enjoyment of music as an integral part of our cultural and social interaction".

Hearing4all at the ARO 2018

For the 41st Annual MidWinter Meeting of the Association for Research in Otolaryngology (ARO) in mid-February 2018, 18 Hearing4all-associated researchers and doctors from Oldenburg and the Hannover Medical School (MHH) travelled to San Diego (California). The ARO organizes an annual, internationally renowned hearing research conference. This year's ARO started with the Presidential Symposium „From Bench to Boardroom: Perspectives on Commercializing Research in Otolaryngology" and offered many sessions on a wide range of topics such as Inner Ear, Middle Ear, Auditory Cortex, Clinical Otolaryngology and Pathology, Speech Perception and many other in-depth contributions. This year, 1109 international poster contributions and 204 lectures from scientists and clinicians from all over the world were presented. The hearing researchers of the MHH were represented with 20 scientific poster contributions and 3 lectures, which involved many subject areas of the ARO, such as Clinical Otolaryngology, Diagnostics, Auditory Cortex and Drug Delivery. The Cluster of Excellence Hearing4all was successfully represented with its contribu-tions and offered many opportunities for interesting dis-cussions.

Foto: Universität Oldenburg

Dr. Anna Warzybok receives DEGA Lothar Cremer Prize

This year's Lothar Cremer Prize of the German Society for Acoustics (DEGA) went to Dr. Anna Warzybok. The prize is awarded to young scientists for their innovative and groundbreaking work on audiological acoustics and international language-test development.

Anna Warzybok is a member of the Cluster of Excellence „Hearing4All" and has headed her own junior group since 2017, dealing with multilingual model-based rehabilitati-ve audiology and funded by the German Research Foun-dation (DFG) with 500,000 euros in project funds.

The Lothar Cremer Prize is awarded annually at the con-ference of the German Society for Acoustics (DAGA). This year's award ceremony took place on March 20 at the TU München.

The 2000 Euro prize is named after Lothar Cremer (1905-1990), a leading scientist in the field of technical acou-stics.

Photo: Universität Oldenburg

HörTech and Hearing4all at the 21st DGA Annual Conference

„Hearing: from sound wave to cognition" was the motto of this year's annual conference of the German Society of Audiology (DGA), which took place in Halle from 28 February to 3 March. HörTech gGmbH and the Cluster of Excellence Hearing4all presented the latest results from application-oriented Oldenburg hearing research at the industrial exhibition.

Various demonstrators exhibited the many possible applications of „TASCAR", a toolbox for acoustic scene creation and rendering, in the development and evaluation of hearing-system algorithms. TASCAR is a software solution for creating virtual acoustic environments: Moving sound sources are psychophysically correctly simulated in real time and can be synchronized with video sources or interactive computer graphics for immersive, interactive user studies.

Based on the latest research results from the University of Oldenburg, HörTech presented the „Oldenburg Measurement Programs 2.0" with a multitude of new features. The software, established in hospitals and research labs, provides audiologists with an instrument with which modern methods of hearing diagnostics can be practically carried out with a flexible and modular system. The range extends from the classical speech test to loudness scaling and modern methods of speech audiometry at rest and in noise.

The Cluster of Excellence Hearing4all is pursuing the new concept of „Common Audiological Functional Parameters" (CAFPAs) in order to achieve a long-term „audiological precision medicine." This will allow exact, individualized diagnostics and the combination of even incomplete audiological data from various clinics in a „Big Data" con-cept. In order to gather valuable information about the connection of CAFPAs to audiological tests and findings/prostheses, doctoral student Mareike Buhl conducted a survey among ENT physicians, clinical audiologists and hearing-care professionals at the 21st DGA Annual Con-ference.

Events and Advanced Training Sessions in Auditory Valley

25 April 2018

Day against noise: Lecture „Hearing aid or cochlear implant? Which device helps whom?“
Schlaues Haus Oldenburg, 7.30 pm

23 - 27 April 2018

Hanover Fair: ENT Clinic and Cluster of Excellence Hearing4all are represented at the joint stand of the State of Lower Saxony:
„Tailor-made: The cochlear implant will soon be made individually for each patient using 3D printing in the operating theatre.“ Booth F30, Hall 5

16 May 2018

Advanced training Oldenburg language tests: This workshop will answer the question as to which test procedure is best suited to which question and how it should be carried out. In addition, the comparison with previously established test procedures is made.
Registration at http://www.hoertech.de

08 June 2018

ENT and DSB-HÖRmobil on site: Free hearing test and advice on hearing loss, 14:00 - 18:00
Bahnhofstrasse 13, 30159 Hanover, Germany

11 - 15 June 2018

CeBIT 2018: The Cluster of Excellence Hearing4all presents the latest research results at the joint Lower Saxony booth.

16 June 2018

The Cluster and HörTech present themselves at the Long Night of Music in Oldenburg.

20 June 2018

Parliamentary evening of the Cluster of Excellence „The hearing system - the individual control centre of our networked world. From hearing aids and cochlear implants to the all-rounder of the future?!“ in Zeitfür... in Hanover

22/23 June 2018

Tutorial and trade fair presence of the cluster at the North German ENT Congress in Oldenburg

07 July 2018

10th Hannoversches CI Tennis Tournament: Open tennis tournament for CI patients, their friends and relatives of all age groups and all skill levels.
Contact: Prof. Dr. Lesinski-Schiedat, les@hoerzentrum-hannover.de

31 August - 01 September 2018

20th Hanover CI Congress: Interdisciplinary congress for patients, doctors, speech therapists, teachers, specialists, self-help groups, interested people and friends, Feodor-Lynen-Straße 15, 30625 Hanover, Germany

22 August 2018

Lecture on the project VIBHear, Schlaues Haus Oldenburg, 7:30 pm

06 September 2018

Concert at the Haus des Hörens: Sönke Meinen & Bjarke Falgren - Magical Places, 7.30 pm, tickets can be pre-ordered on 0441 2172-200.

09 September 2018

Regional discovery day and open day at the DHZ: A colourful programme for everyone interested - with hearing tests, lectures on hearing disorders and hearing-system care, hands-on activities for young and old, information from self-help associations and much more...
12.00 - 16.00 at Deutsches HörZentrum Hannover

21 September 2018

Open day at the Haus des Hörens Oldenburg: From 1 p.m., the internationally renowned scientists from the House of Hearing open the doors of the research insti-tutions and show all interested parties numerous phe-nomena and experiments on the subject of hearing.

Hearing 4all

Exzellenzcluster im Auditory Valley Zukunft Hören

AUDITORY VALLEY FUTURE HEARING

Auditory Valley offices

The offices act as the contacts and coordinators for all Auditory Valley work. The offices have a broad range of tasks as active coordinators and points of contact for Auditory Valley. The team of staff from HörTech gGmbH and the Hannover Medical School research topics and trends, bring innovative minds together, determine Auditory Valley's strategic orientation, make sure the activities have a focus and work to give the region's expertise a clear profile.

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