

Joining the Square Kilometre Array

Max Planck Society becomes newest member of SKA Organization

The Max Planck Society has become the 13th member of the SKA Organization, following an unanimous vote by the SKA Board of Directors. The decision to accept the application for membership was taken at the 29th Board meeting at the SKA Organization Global Headquarters in the UK.

The Max Planck Society joins the final phase of the SKA Organization, which is overseeing the telescope design phase, until the process of transitioning into the SKA Observatory, an intergovernmental organization (IGO) established by treaty to manage the construction and operation of the SKA, is completed. Any further German involvement through participation in the SKA Observatory remains to be decided and will be the subject of future discussions.

“I am delighted to welcome the Max Planck Society to the SKA Organization as our 13th member, a deserved recognition of the significant contributions Germany has made to the SKA project over the years, and particularly in this

crucial pre-construction phase,” the Chairwoman of the SKA Board of Directors, Dr. Catherine Cesarsky, explained.

German research institutions and industry have been an intrinsic part of SKA-related projects since its earliest days, and make a significant contribution to ongoing SKA design activities. In particular, the Max Planck Society provides instrumentation in the form of detectors, data acquisition and analysis systems for South Africa’s world-class MeerKAT telescope, an SKA precursor facility which will become part of SKA-Mid.

“I am extremely pleased to see our German colleagues consolidating their long-lasting involvement in SKA-related activities both at a scientific and industrial level,” added Prof. Philip Diamond, SKA Director-General. “Germany’s great wealth of expertise in radio astronomy, both in science and engineering, will continue to be invaluable as we move ever closer to SKA construction and operations.”

The Max Planck Society is a non-profit organization with 84 Institutes and research facilities. In collaboration with other German institutions and industry, it has been involved across many areas of SKA design work, including within the Mid Frequency Dish Array, Low Frequency Aperture Array, Central Signal Processor, Science Data Processor, Telescope Manager, Signal and Data Transport consortia, and research and development work within the Phased Array Feeds and Wideband Single Pixel Feeds consortia.

One of the Max Planck Society’s Institutes is the Max Planck Institute for Radio Astronomy (MPIfR), a key player in the SKA’s Dish engineering consortium. Together with German industry partners, such as the telescope antenna specialists MT Mechatronics (MTM), and international partners, the Dish consortium is responsible for designing the SKA’s mid-frequency array (SKA-Mid), to be deployed in South Africa. The Dish consortium has already delivered two prototype SKA dishes: SKA-P, which is currently being tested in China, and SKA-MPI, funded by the Max Planck Society, which is under construction on the SKA site in South Africa’s Karoo region.

“The SKA is a great opportunity for astronomers, engineers, physicists and data scientists. Besides becoming an amazing discovery machine, SKA pushes the boundaries of what is technically possible, especially in the handling and analysis of huge amounts of data. The Max Planck Society is at the center of all these exciting science and technology developments, and we are pleased to now be able to contribute officially to the SKAO efforts,” says Prof. Michael Kramer, Director at the MPIfR.

The Max Planck Society has funded a second SKA prototype dish, SKA-MPI, currently being constructed on site in South Africa, bringing together Chinese, Italian and German components.



Remembering Suzanne Eaton

The Max Planck Society mourns the death of an exceptional scientist

The Max Planck Society mourns the death of Suzanne Eaton, whose life came to a tragic end in Crete on July 2, 2019. In a personal letter to her husband, Tony Hyman, Max Planck President Martin Stratmann paid tribute to Suzanne Eaton as an outstanding scientist and a wonderful human being, saying that Eaton had been a key person, an essential pillar of the Institute in Dresden right from its very beginning.

Suzanne Eaton was Senior Research Group Leader at the Max Planck Institute of Molecular Cell Biology and Genetics, and a Professor at the Biotechnology Center of the Technical University of Dresden. In 2001, she started linking seemingly distant areas of research in her own laboratory in order to find deeper explanations for the pattern formation in the development of the fruit fly. The focus of her research was the question "How do cells form tissues?"

"Suzanne had a huge impact on the development of our Institute in that she bridged different disciplines – biology, physics and mathematics – and as such inspired the interdisciplinarity that has characterized the research at the MPI-CBG since its conception," writes the Board of Directors in their statement following with "Suzanne was in her own league." Thanks to her insatiable curiosity and creativity, she discovered new and groundbreaking approaches to understanding how cells communicate with each other to form tissue. Through the discovery of signaling molecules, the morphogens, and their physical properties and interactions, Suzanne's team was able to explain how signals are spread over long distances in tissues. Most recently, Suzanne's research focused on the interaction of signaling and metabolic pathways.



Suzanne Eaton

Her studies uncovered fundamental biological mechanisms, her publications in high-ranking journals speak for themselves: Suzanne Eaton was a key player in her field of research, and her scientific work had an immense international impact in the wider scientific community. She played a big part in making the Max Planck Institute of Molecular Cell Biology and Genetics, and the city of Dresden, known throughout the world as a beacon of science and an excellent environment for early career researchers.

She was instrumental in shaping the development of the Dresden Institute. Suzanne Eaton had a decisive influence on this community as a family-friendly, international, intellectual environment with plenty of room for innovative ideas. For her, there seemed to be no doubt that it was possible to balance a life lived to the full with a career in science. She found the perfect balance to combine her many roles of scientist, mother, athlete, and enthusiastic piano player. With her calm and steady personality, she made the first generation of young group leaders feel welcome coming to Dresden from top universities to develop their own research, giving them the feeling of having come to the right place and of being able to succeed.

We miss a wonderful, creative, lively, enthusiastic colleague and friend, and a brilliant scientist.

The Max Planck Institute of Molecular Cell Biology and Genetics has collected tributes to the life and legacy of Suzanne Eaton from family, friends and colleagues:

www.mpi-cbg.de/institute/remembering-suzanne

Max Planck survey on work culture and atmosphere

The findings show that the principles of scientific action must be complemented by the principles of cooperation

In February 2019, the President of the Max Planck Society, Martin Stratmann, commissioned a science-based Max-Planck-wide survey on working culture and working atmosphere. The findings are now in. “We wanted to get an idea of the mood across the whole organization and create transparency for cooperation and leadership culture at the Max Planck Society,” Martin Stratmann explains. “The results show how important it is to continue to build a performance-oriented but also a respectful and appreciative working culture and atmosphere at our Institutes and to introduce measures for changes at the relevant locations.”

The study was implemented by a research team from the Fraunhofer Institute for Work Organization headed by Prof. Dr. Martina Schraudner. More than 9,000 employees of the Max Planck Society, which represents 38 percent of the entire workforce, took part in the survey. The study is unique in this form, because for the first time, the questionnaires was not only sent to doctoral candidates and postdocs, but also to all scientific and non-scientific staff. The topic of bullying was also investigated, after public reports in 2018 had referred to allegations at two Max Planck Institutes.

THE FINDINGS AT A GLANCE

The uniqueness of the data set provides a benchmark in the generally poorly researched environment of the work conditions in cutting-edge research.

- The staff members of the Max Planck Society demonstrate a high level of commitment to the organization, i.e. they are willing to display a high

degree of individual commitment and within their respective work units are bound by a strong shared vision and collegiality.

- About 80 percent of the respondents say that individuals with leadership functions have a high employee focus and are willing to support a dynamic change culture. This is particularly the case for scientific staff members. Non-scientific staff view the change culture slightly more critically. In particular, they are less likely to confirm that they feel respected by their superiors.
- In the last 12 months, around 10 percent of respondents stated that they had experienced bullying at the workplace based on their own understanding. This is an average result compared to recent international studies. During the same period, 3.9 percent of all respondents stated that they had at least occasionally experienced sexual discrimination, which is below the international average. The current report by the U.S. National Academies of Sciences, Engineering and Medicine, for example, gives a figure of 20 percent in this area.
- Deficits are identified in relation to mentoring by direct superiors. Women in particular feel that they receive

less support in their careers. Among the main target groups of mentoring, doctoral candidates and postdocs, only one in two respondents agreed with the statements in the survey regarding career development support.

- Based on their own estimates, non-scientific staff (11.8%) were subjected to bullying significantly more often during the 12 months of the survey than scientific staff (7.5%).

CARRYING OUT THE STUDY

In order to guarantee the neutrality, data protection and especially the scientific quality of the project, a research team was set up at the Center for Responsible Research and Innovation at the Fraunhofer Institute for Industrial Engineering IAO (CeRRI) under the direction of Martina Schraudner. The survey's sample size is the largest, in absolute terms, of any investigation of a single scientific organization.

The survey is highly representative because the sample size makes up a very good proportion of the total. “Compared to researched studies, a globally unique data set regarding sample size, details and thematic scope was collected on work conditions in cutting-edge research,” Martina Schraudner emphasizes.



Wolfgang Baumeister wins the 2019 Stifterverband prize

The biophysicist has revolutionized molecular structural biology with the help of cryo-electron tomography

In contrast to our knowledge of our planet, there are still many unexplored regions in the cellular nanocosmos. The fragile architecture of large protein complexes composed of numerous subunits is particularly difficult to decipher. This is because attempting to isolate and purify the proteins also rips them out of their functional context. Wolfgang Baumeister has been pursuing a completely new approach for more than three decades.

The Director at the Max Planck Institute of Biochemistry has developed a method that opens up entirely new possibilities and numerous fields of application for structural research: cryo-electron tomography. He is now being recognized with the Wissenschaftspreis des Stifterverbands 2019 (Science Award of the Donors' Association) for his pioneering work. The prize, which is endowed with € 50,000.00, was awarded by the Max-Planck-Gesellschaft (MPG) and the Stifterverband at the annual MPG meeting in Hamburg on 25 June.

Wolfgang Baumeister receives the prize in recognition of his outstanding achievements in the field of cryo-electron tomography. What is particularly notable here is his examination of molecular and supramolecular structures within the context of intact cells at high spatial resolutions. The jury explained that it was awarding the prize because of the method's great economic relevance, which is evident in important areas of high technology, such as electronics, materials technology and pharmaceuticals. The cryo method allows larger spatial structures from cells to electronic components to be tomographically captured at very high resolutions and analyzed.

"We are developing methods to make the molecular architecture of cells visible," said Wolfgang Baumeister, summarizing his research focus. The cryo-electron tomography method that he has developed in conjunction with his team opens up completely new opportunities for structural research: entire cells or cell organelles are "shock-frozen" in liquid nitrogen in the blink of an eye. The fragile cell architecture remains unchanged while it is embedded in the glassy ice. Two-dimensional images of the samples to be examined are taken from different angles. A three-dimensional image is then built from these images. This method has already made it possible to understand the architecture of many proteins in their cellular environments.

"It is only possible to understand the various functions for which the molecular machines are responsible by examining their structures," explained Baumeister. Using cryo-



Wolfgang Baumeister is awarded the 2019 Stifterverband prize for his cryo-electron tomography. The method opens up numerous application possibilities, including in electronics, materials technology and pharmacy.

electron tomography, he and his team have been able to decipher the structure of the 26S proteasomes, which are highly complex molecular shredders for proteins that are made up of 66 individual proteins. He and his team have also been able to reveal the superior organization of the ribosomes in cells, the so-called polysomes.

The researchers have now turned their attention to other cellular structures and are investigating the blueprints of pores in nuclear membranes, contact points between nerve cells (synapses) and protein complexes in membranes and cell walls. It is possible to use cryo-electron tomography to image these macromolecular structures in the intact cellular environment. Pathological changes, such as toxic protein aggregates that are mainly associated with such neurodegenerative diseases as Alzheimer's and Parkinson's, may also be investigated in this way. This method, which has been developed in basic research, is potentially able to open up new prospects for therapies by providing insights into cell architectures.

United with one voice

The Max Planck Society celebrates the inauguration of PostdocNet at Harnack House



The newly elected spokesperson of the PostdocNet initiative, Yu-xuan Lu, MPI for Biology of Ageing, at the inaugural event at Harnack House in Berlin at the end of April. The purpose of PostdocNet is to help forge links between all Max Planck postdocs.

PostdocNet – as ordinary members or as part of a working group – are encouraged to contact the group through the website or Twitter.

Spokesperson Yu-xuan Lu takes a positive view of the work to be done: “We are delighted to have finally built a bridge between PhDnet and LeadNet, and the Max Planck Society will also benefit from PostdocNet as soon as it becomes easier to exchange questions and ideas.”

The postdoc phase sets the course for a future career: while researchers enjoy increasing independence when planning, conducting and presenting their research and undergoing advanced training, they also have to assume more responsibility for supervising junior scientists and obtaining research resources. Moreover, this is the phase in which important career decisions are often made – for example whether to remain in academic science and research or to switch to business and industry.

In order to help postdocs deal with the complexity of this career phase, the Max Planck Society, with Christiane Haupt (Human Resources Development & Opportunities Department) as the Project Leader, has put together a postdoc package that includes structured guidelines and an extensive advanced training program. A conference with the title “CareerSteps for Postdocs” will also be held on June 6, 2019 at the Max Planck Institute for Brain Research in Frankfurt.

PostdocNet was set up at the end of April by postdocs from various Max Planck Institutes. This initiative will in future serve to improve links between all the Max Planck Society’s postdocs. Its primary goals are to provide postdocs with support during their critical professional orientation phase and create a network for dialog.

In April, another element was integrated into the structure of the postdoc phase: PostdocNet. This is a grass roots process that has already been attempted several times at the MPG but is only now bearing fruit, due not least to the high fluctuation in postdocs and the intensity of the postdoc phase. “Staff at our Administrative Headquarters were already giving us hints and tips on organizing the start-up back in October 2017, and last year the President officially gave us the green light, also with regard to financial support for our inaugural event. We are very grateful for the help that PostdocNet has received,

not only from the MPG, but also from PhD and other postdoc organizations,” explains Yu-xuan Lu from the MPI for Biology of Ageing, who was recently elected as the PostdocNet spokesperson.

The structure and statutes of PostdocNet are oriented on those of partner organizations. As with PhDNet, it encompasses the following working groups: *General Meeting, Secretary, Web/Media, Seminar, Survey and Equal Opportunities*. PostdocNet will also continue engaging with working groups on the topics of “Social Requirements”, “Scientific Requirements”, “Legal” and “Postdoc Definition”; this last group has the status of an interim committee.

Even though PostdocNet has made great strides since the beginning of 2019, there are still obstacles to overcome. Around half of all MPIs are currently represented, and PostdocNet aims to forge links with postdocs at all MPIs over the next year. All postdocs who are interested in becoming part of