

REPORTS OF BRIDGE-FELLOWSHIPS

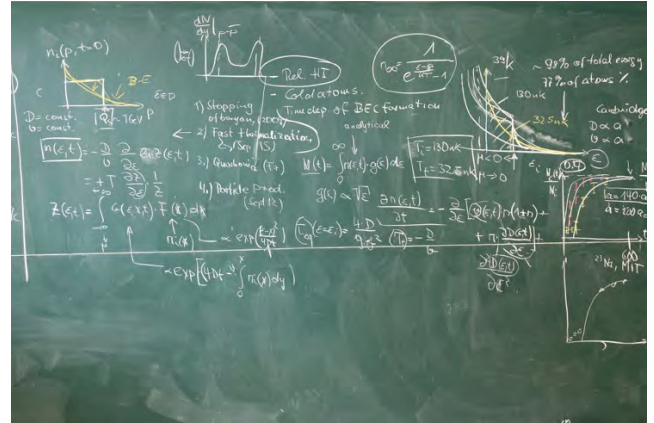
*BRIDGE Report by Club member
 Prof. Georg Wolschin, Heidelberg University,
 BRIDGE Fellow 2022 in Sendai and Tokyo*

Following a three-months research stay in 2005 as a JSPS senior invitation fellow and several short-term conference visits, a BRIDGE fellowship provided the opportunity to renew my collaboration with Japanese physicists. Originally planned for 2020, the COVID-19 pandemic caused a delay until this year, and it was finally possible to enter the country for a one-month stay with a visa and PCR-test in August 2022.

My original host had meanwhile retired from Shinshu University, but Prof. Emiko Hiyama, whom I had met at a physics conference in Italy, agreed to act as a host at Kyushu University in Fukuoka. During the pandemic, however, she got a call from Tohoku University, so that we shifted my visit with the consent of JSPS to Sendai, where I had given two online talks in 2021. Hence, I first spent a week at Tohoku University when there were the entrance exams for the master’s program, so that there was enough time to outline a research project that I had in mind for the BRIDGE stay. This was especially useful because the research work that we had proposed in the original application was already completed, and published due to the pandemic delay.

The second and third week of my stay we moved both to the RIKEN research center in Wako, north-west of Tokyo. This center is worldwide recognized for excellent basic research in many areas of science: chemistry, physics, computer science, brain research and other fields. A prominent achievement in recent years was the synthesis of element 113 Nihonium, using the cyclotron in the Nishina laboratory. In theoretical research, the Interdisciplinary Theoretical and Mathematical Sciences Program (iTHEMS) led by Prof. Tetsuo Hatsuda plays an outstanding role, whereas Prof. Hiyama leads the Strangeness Nuclear Physics Laboratory. This provides a fruitful research environment, where I started writing a publication about a special topic in relativistic heavy-ion re-

search and quark-gluon plasma formation (Limiting fragmentation in stopping), gave a talk about quarkonium physics at energies reached at the Large Hadron Collider of CERN, Geneva, and had many discussions with the RIKEN theory colleagues (see the blackboard).



Discussion at RIKEN

At the end of my stay at RIKEN I followed an invitation by Prof. Shoji Nagamiya to visit the J-PARC research center at the East coast of Japan, where pioneering experiments in many fields of physics are being performed. Of foremost interest is the long-baseline T2K neutrino experiment, where myon-antineutrinos are produced at J-PARC (Tokai, T) and sent through the earth to the Super-Kamiokande detector in 295 kilometers distance at the Kamioka (K) mine. On the way, they can change their flavor and become electron-antineutrinos, which are then detected at Super-K, together with the disappearance of the myonneutrinos. The oscillation parameters of the neutrino beam could thus be determined quite accurately.



I had already seen the facility in 2005, when it was still under construction, with Prof. Nagamiya in charge of the whole project. He retired when the reconstruction work after the 2011 earthquake and subsequent tsunami that caused a shutdown for about a year was complete, but continued research at RIKEN and KEK. It was most interesting to revisit the now fully operating research center together with him (see the picture).

Visiting J-PARC

During the last week of my current BRIDGE stay, I visited colleagues who had invited me for talks about heavy-ion and cold-atom topics at Sophia University Tokyo and Tokyo University. I was particularly happy to meet Prof. Kenji Fukushima – a theorist on the Hongo campus – who had been a visiting professor at our Heidelberg theory institute just before the start of the COVID-19 pandemic. Since he is an active fisherman, we had an excellent sashimi dinner in an old-style Japanese restaurant.

Before leaving Japan for Germany from Haneda airport in September, I met one of my former master students in Tokyo. He now works at the Deloitte Japanese headquarter, is married with two young children. For some years to come, they plan to stay in the country. Since they found Tokyo a bit crowded, they moved to Yokohama, where the kids go to the German school, which was founded already in 1904, and now has about 600 pupils who are looking towards a bright future.



At the Hongo Campus of Tokyo University

*BRIDGE Report by Prof. Christian Becker-Asano,
Stuttgart Media University,
BRIDGE Fellow in 2022 at ATR Kyoto and Tokyo*

I arrived in Tokyo through Haneda airport on August 21st, 2022. The first two days of my fellowship period I stayed in Tokyo to meet the production site of the company A-lab to check the final state of the production of an android robot that was later delivered to Germany on October 5th, 2022. A PhD student of my university, Patrick Takenaka, accompanied me.

After transferring to Kyoto by Shinkansen, I started working at my host institution, the Advanced Telecommunications Research Institute International (ATR), in close collaboration with Dr. Minato. I could only meet Prof. Ishiguro, who had given a presentation in the yearly JSPS/JSPS Club Symposium in Karlsruhe under the topic robotics, remotely, because he had several business trips during that time. While staying at ATR, I learned about the details of the software platform of the android ERICA, discussed with Dr. Ishi about the sensor network technology, and got a presentation of several other androids currently under development there.

Besides working on the finalization of a research proposal (submitted to the German Research Foundation), I could also meet with Prof. Kanda (now Kyoto University) and Dr. Miyashita (director of the Interaction Science Laboratories at ATR). I was invited by Dr. Miyashita to give a talk during his workshop at the International Conference on Social Robotics (ICSR2022) to be held in December 2022, which I accepted. I presented my ideas about future collaboration based on the fact, that we in Germany will have an android robot similar to ERICA as well, very soon. An official agreement was set up and is currently in its final stage. It will allow us to use the software platform of ATR for our android at Stuttgart Media University and, based on this, perform collaborative research on Android Science in the next years to come.