

Physikalische Gesellschaft zu Berlin: The oldest physics society worldwide

M. Müller-Preussker
*Physikalische Gesellschaft zu Berlin,
Humboldt-Universität zu Berlin, Institut für Physik,
12489 Berlin, Germany*

The history and present tasks of the Physikalische Gesellschaft zu Berlin e.V. – a regional, independent registered society of the Deutsche Physikalische Gesellschaft e.V. – are shortly reviewed.

I. HISTORY

It is a great pleasure, with this talk – given on the occasion of awarding the town Kamień Pomorski with an EPS historical site memorizing the invention of the *Kleist* or *Leyden Jar* by Ewald Georg von Kleist in 1745 – to introduce one of the oldest scientific societies of the world, the *Physikalische Gesellschaft zu Berlin* (PGzB).

The PGzB was founded in 1845, i.e. 100 years after Kleist had realized the idea of an electrical capacitor. In 1842, Heinrich Gustav Magnus, at that time lecturer in physics and technology at the Berlin University and to most of us well-known by the famous *Magnus Effect*, had equipped a physical laboratory in his private house *Am Kupfergraben 7* (see Fig. 1) which he used for teaching, student's lab demonstrations and his own experimental research. Therefore, the *Magnus-Haus* is considered as the first physics institute in Germany (for details we refer to Ref. [1]). Magnus was able to attract excellent students and young researchers such as E. du Bois-Reymond, H. Helmholtz, G. Kirchhoff, W. Siemens and others, who also met regularly for colloquia in his house. Participants of these colloquia decided to establish the *Physikalische Gesellschaft zu Berlin* on January 14th, 1845. Many famous names can be found among the list of PGzB members in the second half of the 19th century: L. Boltzmann, R. Clausius, J. Halske, H. Hertz, O. Lummer, W. Nernst, M. Planck, E. Warburg, K. Weierstrass and others.

In 1899 the PGzB evolved into the *Deutsche Physikalische Gesellschaft* (DPG). Today, with more than 60,000 members it is worldwide the largest and one of the most important national physical societies. However, after World War II, because of the division of Germany into four sectors, several regional divisions were reestablished. In 1949 this happened in West Berlin with the PGzB. The first chairmen were Carl Ramsauer and Max von Laue. In 1952 the Physical Society of the German Democratic Republic was also founded. But joint activities between East and West Berlin became more rare and were enforced to stop after 1961, when the Berlin wall was built. In 1963 the DPG emerged again as a unique organisation in the western part of Germany, while the PGzB



FIG. 1: Magnus-Haus in the Berlin city centre and its outside memorial plaque. [Source: Wikimedia Commons (left), DPG (right)].

– like two other German regional physics associations (Bayern and Hessen-Mittelrhein-Saar) – remained as an autonomously acting regional division of the DPG. After the German reunification in 1990 the *Physikalische Gesellschaft der DDR* and the *Deutsche Physikalische Gesellschaft* merged, and the PGzB extended its activities again to Berlin as a whole and to the surrounding area between Potsdam and Frankfurt/Oder.

At present the PGzB has approximately 4,100 members being registered as DPG members in this region of the states Berlin and Brandenburg. Its activities are mainly connected with the existence of four physics departments at the universities in Berlin and Potsdam, with many non-university research institutes belonging to the Max Planck and the Fraunhofer Society as well as the Helmholtz and Leibniz Associations and with various companies. The PGzB maintains also contacts to schools, in particular in Berlin.

The PGzB members elect their managing board every two years. Its present chairman is the author of the given talk. The chairwomen-elect is Prof. Ulrike Woggon, Technische Universität Berlin, who will take over the leadership on April 1st, 2014.

II. GENERAL TASKS

The PGzB is serving the fields of pure and applied physics. The society brings its members, all physicists and students living in Berlin and the surrounding region closer together and fosters the exchange of ideas between its members and other colleagues.

Its constitution defines the following general tasks (see also Ref. [2]).

- Promoting teaching, research and development in physics and neighbouring disciplines,
- fostering exchange of information and opinions among physicists and people interested in physics,
- promoting physics-oriented scientific education and training in the area of high schools, universities and other educational institutions,
- fostering collaboration of all people being active in the field of physics or being interested in physics in schools, high schools, colleges, universities, research institutes, industry and business.

The PGzB is supporting excellence by providing awards on all steps of the career of young talented people from high school students up to the level of excellent researchers in the years after the PhD. Moreover, it organizes a series of regular and open colloquia in collaboration with the Freie Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin, and the Universität Potsdam. In addition, excursions with tours of companies and institutes with a strong relation to physics applications are also offered.

III. AWARDS

The highest PGzB award is the **Karl Scheel Prize** which includes at present a prize money of 5,000 Euro. Once a year, a young PGzB member is honoured with this award for her or his excellent research results obtained in the first years after she/he has received the PhD. With this prize the PGzB honours the long-standing DPG member Karl Scheel, follows his testament and uses his heritage donated to the PGzB in the 1950's.

Karl Scheel was born in 1866 in Rostock. After graduating from the *Grosse Stadtschule zu Rostock* he started studying physics in Berlin under the supervision of H. Helmholtz and A. Kundt. Very early he became a member of the PGzB. From 1900 until 1935 he was the secretary of the DPG. Having obtained his PhD in 1890 he joined the Physikalisch-Technische Reichsanstalt (PTR) in Berlin, where he started to work with W. Wien. In 1913 he became appointed as the head of the Laboratory for Heat and Pressure in the Technical Division of the PTR where he stayed until his retirement in 1931. He was a great experimentalist known for his ongoing engagement to reach the highest precision of the measurements in his field of research: thermodynamic properties of gases and liquids, thermometry and the generation of extreme vacua. His editorial work for the Journals *Fortschritte der Physik*, *Physikalische Berichte*, *Verhandlungen der DPG* and *Zeitschrift für Physik* became important for the whole physics community in Germany and for their world-leading position at that time. Moreover, his editorial work in systematizing experimental physics results in several famous book series such as *Landolt-Börnstein: Physikalisch-Chemische Tabellen*, *Handbuch der Physik* (with Hans Geiger) and *Physikalisches Handwörterbuch* (with Arnold Berliner) has made him unforgettable in the natural sciences. In 1936 he died in Berlin (more information in Ref.[3]).



FIG. 2: Portrait of Karl Scheel (left), the commemorative medal of the Karl Scheel Prize (center) and the commemorative plaque in Rostock (right) [Source: PGzB].

In his testament Karl Scheel (see Fig. 2 left) had determined that the PGzB should regularly award a widely visible prize, now called the *Karl-Scheel-Preis*, to a distinguished young member of the Physical Society in Berlin and to celebrate this occasion accordingly. Moreover, he wanted that part of his donation should also be used for an annual prize for the best result in the graduation exam in physics at the *Grosse Stadtschule zu Rostock* as well as for establishing a commemorative plaque in Rostock.

The Karl Scheel Prize has been awarded annually by the PGzB since 1958. In 2014 the 75th young scientist is expected to be honoured in this way. Together with a certificate with the head of Karl Scheel is presented to the awardee (see center of Fig. 2). In 1993, i.e. after the reunification of Germany, it finally became possible to memorize Karl Scheel by putting a commemorative plaque (see Fig. 2 right) on the outer wall of his former school building in Rostock.

Since 1994 the PGzB awards annually the **Karl Scheel Student Award (Karl-Scheel-Schüler-Preis)**, first at the *Grosse Stadtschule zu Rostock* and since 2006 to its successor the *Innerstädtische Gymnasium Rostock*.

The **Carl Ramsauer Prize** aims at honouring the four best PhD thesis results in physics and closely related fields defended at the four above mentioned universities in Berlin and Potsdam. The research work can have been carried out at any of the physics departments or at non-university research institutes within the PGzB region. The Carl Ramsauer Prize originally financed by the company AEG has been awarded since 1989. In the last few years it has been supported by private sponsors. The award includes a certificate and a prize money of 1,500 Euro for each recipient (for more information see also Ref. [2]).

With this prize another famous physicist, Carl Ramsauer (1879 - 1955), is honoured. In 1921, i.e. shortly after he had found the effect that slow electrons may penetrate a gas better than faster ones, named after him *Ramsauer Effect*, he received a professorship at the Technical University Danzig, today Gdańsk. In 1928 he founded the central research laboratory of AEG in Berlin. In 1941 he became the president of the DPG. After he was appointed ordinarius at the Technische Universität Berlin in 1945, he reestablished the PGzB in 1949 and was elected as its first chairman (see also Ref. [4]).

The **Physics Study Prize (Physik-Studienpreis)** of the PGzB is honouring the best diploma or master students. From 2002 until 2011 sponsored by the Wilhelm and Else Heraeus-Foundation, it is supported now by the Siemens AG. In 2013 each of the eight recipients received a prize money of 1,000 Euro.

Last but not least the **PGzB Student Award (PGzB-Schülerpreis)** is provided for excellent school achievements in intensive physics courses of Berlin secondary schools (Gymnasium) at the level one year before graduation. The prize consisting of a certificate signed by the PGzB chair(wo)man and a book gift is awarded every year to approximately one hundred students during a ceremony at the Technische Universität Berlin. During this ceremony internationally recognized physicists present highlights of modern physics, e.g. recently colleagues from DESY, Zeuthen, Thomas Naumann with a talk entitled *Higgs hunting at the world machine – Physics at the LHC at CERN* and Christian Spiering with *Neutrino astronomy at the south pole – A window to the universe is opening*. With several hundred participants this ceremony has become one of the traditional outstanding events of the PGzB.

IV. COLLOQUIA

The PGzB organizes two series of regular colloquia. The **Berlin Physics Colloquium** takes usually place in the Magnus-Haus five (four) times during the winter (summer) term. The physics departments of the Berlin and Potsdam Universities together with the PGzB take the responsibility for inviting distinguished speakers, but also for financial support. The topics cover the whole range of physics research including multi-disciplinary applications. Very recent topics and speakers have been:

- *World formula – From a different point of view*, Johanna Erdmenger, Munich,
- *Physics of living systems*, Erwin Frey, Munich,
- *The “Golden Age” of transiting exoplanets: The legacy of the CoRoT and Kepler space missions*, Artie P. Hatzes, Tautenburg,
- *Gravitational waves: A new kind of information about the universe*, Bernard F. Schutz, Potsdam-Golm,
- *Manipulating photons non-destructively and taming Schrödinger cats of light*, Serge Haroche (Paris, Nobel prize in physics 2012).

The Magnus-Haus provides excellent opportunities to continue the discussion after the colloquia and to meet other PGzB members, while some drinks and food are offered. For more details see Ref. [2].

Since the GDR time the **Max von Laue Colloquium** has a great tradition and became another highlight. It takes place only twice per year but in one of the large auditoriums at one of the Berlin Universities, during the last years at Humboldt-Universität zu Berlin because of its close proximity to the Magnus-Haus. Recent talks have been

- *Massive black holes and galaxies*, Reinhard Genzel, Garching and Berkeley,
- *Social science and what physics can contribute to it*, Dirk Helbing, Zürich.

The list of famous speakers in the past looks impressive: Alexander Polyakov, Claude Cohen-Tannoudji, Aleksei A. Abrikosov, Wolfgang Ketterle, Klaus von Klitzing, Theodor W. Hänsch, Julius Wess, and many others.

V. EXCURSIONS AND TOURS

From 1998 to 2002 and since 2007 the PGzB regularly organizes excursions with tours of companies and institutes in Berlin and in its close neighbourhood. Physical-technical problems and physics applications are the main target of these tours. Having in mind the motto “one only knows, what one can see” PGzB members can meet their colleagues working in research and business areas and become familiar with their achievements and problems. Some examples of this part of the PGzB activities are the tours at

- Max Planck Institute of Colloids and Interfaces, Potsdam-Golm,
- Gas Turbine Factory of Siemens AG, Berlin,
- Rolls-Royce Germany, Blankenfelde-Mahlow,
- Hasso Plattner Institute for Software Systems Engineering, Potsdam-Babelsberg.

VI. CONCLUSIONS

Following a great history the PGzB provides various opportunities to bring together physicists and people interested in physics from schools, universities, research institutes, and business in the Berlin-Brandenburg area. The program of colloquia reflects a broad spectrum of modern physics including their interdisciplinary aspects and their application in our modern interdependent world. By rewarding outstanding results in studying physics or doing research the Physikalische Gesellschaft zu Berlin promotes excellence on various levels of the career of young people.

The Physikalische Gesellschaft zu Berlin e.V. acknowledges additional funding for its activities by the Wilhem and Else Heraeus-Foundation as well as by the Deutsche Physikalische Gesellschaft e.V.

M. M.-P. expresses his gratitude to the Polish Physical Society and to the University of Szczecin for the kind hospitality extended to him during the conference *Ewald von Kleist contribution and its consequences to the development of science* in Kamień Pomorski and Pobierowo.

-
- [1] D. Hoffmann (Ed.), *Gustav Magnus und sein Haus*, GNT-Verlag, Stuttgart, 1995.
 - [2] Webpage *Physikalische Gesellschaft zu Berlin e.V.*: <http://www.pgzb.tu-berlin.de>.
 - [3] H. Rechenberg, *Scheel, Karl Franz Christian*, in: *Neue Deutsche Biographie* 22 (2005), p. 605-606.
 - [4] W. Möbus, C. Priesner, *Ramsauer, Carl Wilhelm*, in: *Neue Deutsche Biographie* 21 (2003), p. 134-136.