



Biography

Biography of Professor Gisbert Winnewisser

The papers in this special issue of the Journal of Molecular Structure are collected to honor a distinguished scientist and a great friend to many of his colleagues, Professor Gisbert Winnewisser, on the occasion of his 70th birthday.

Gisbert was born, together with his twin sister Ingrid, on September 7, 1936, in the city of Karlsruhe in South-western Germany. As World War II progressed, the family moved to a farm, the Hoferpeterhof, in Bad Peterstal, a small, idyllic village situated in a narrow valley of the Black Forest. Their father had been called up by the German army and fell in battle near Moscow. For the Winnewisser children, including the twins' older brother Manfred, the move to the beautiful countryside was undoubtedly a very happy turn of events; it allowed them to escape most of the ravages of the war. Life on the farm imbued all three of the children with some simple truths and a personal independence that were important in guiding their later endeavors.

Gisbert started school in Bad Peterstal in 1942 and continued in Karlsruhe, where the family returned in 1946. After his gymnasium graduation in 1956, he enrolled as a physics student at the Technical University of Karlsruhe, where he obtained the German 'Diplom' (the equivalent of an MSc degree) in 1963. At this point, Gisbert's brother Manfred was a postdoctoral fellow with Walter Gordy, a pioneer in the areas of microwave, millimeter-wave and submillimeter-wave spectroscopy, including EPR studies, at Duke University in Durham, NC, USA. Gisbert followed Manfred's trail and become a PhD student with Gordy. The PhD studies were interrupted by a trip to Karlsruhe in August 1964, during which Gisbert married 'the girl next door,' Helga ter Jung, who then joined him in Durham. Gisbert obtained his degree in 1967 with a thesis concerned with the intriguing rotation–torsion spectrum of disulfane HSSH, a molecule that he has revisited repeatedly together with its 'relatives' HOOH and HOSH. Gisbert continued to work at Duke until 1968, when he and his family (his son Carsten was born in 1966) moved to Ottawa, where Gisbert

joined the Division of Pure Physics of the National Research Council of Canada to work as a postdoctoral fellow in the laboratory of Gerhard Herzberg. At this time, Herzberg's group at the NRC was the Mecca of molecular spectroscopy, with a strong orientation towards astronomical species; it was an extremely stimulating environment for a young spectroscopist. Gisbert worked at the NRC for two periods, first from 1968 to 1970 and then from 1971 to 1972. Between the two stays in Ottawa, he had an appointment as a Research Professor at the Department of Astronomy and Astrophysics of the University of British Columbia in Vancouver. During his time in Canada, the field of molecular radio-astronomy was opening up wide, and Gisbert realized what an exciting application of microwave and millimeter-wave spectroscopy this could be.

In 1972, Gisbert was probably the only German scientist with the background appropriate to take up the subject of molecular radio-astronomy, and he was offered a position at the Max Planck Institute for Radio Astronomy in Bonn, which he accepted with eagerness, and took his family back to Germany. His work was centered on the 100 m radio telescope at Effelsberg, with which he pursued microwave spectroscopy of interstellar space. By signing up as 'back-up observer' on the most undesirable days of the year, he managed to accumulate a remarkable number of observing hours without offending anyone—except, perhaps, Helga and Carsten, who were left without him on some holidays. In spite of this, Carsten ultimately earned a doctorate in physics, and married a physics teacher. Since the MPIfRA had no laboratory space, a formal collaboration with the Justus Liebig University in Giessen allowed Gisbert to use the laboratory of Manfred Winnewisser, by then Professor of Physical Chemistry in Giessen, and even to contribute a microwave spectrometer to that laboratory. Like many an academic wife who could type, Helga in those years spent many hours typing manuscripts and proposals for Gisbert. This position led to seven productive years, both in astrophysics and in laboratory spectroscopy, at the MPIfRA.

In 1979 Gisbert was appointed Professor of Physics at the University of Cologne and became director of the I. Physikalisches Institut. Under Gisbert's leadership, the

Cologne institute rapidly became one of the world's most active and innovative centers for laboratory molecular spectroscopy at ultra-high resolution in the millimeter and sub-millimeter regions, and for the development of instrumentation for millimeter-wave radio astronomy. An outstanding Cologne project is the KOSMA laboratory (Kölner Observatorium für Submillimeter-Astronomie). KOSMA has maintained for 20 years now a 3 m radio telescope on the Gornergrat in the Swiss Zermatt alps at an altitude of 3135 m above sea level; this telescope is used in the sub-millimeter region. It is not only a unique research tool, it is also of invaluable importance for the education of students. The telescope was initially constructed and tested out on the flat roof of the Cologne physics building in 1984–1985, and it was the most spectacular event of Gisbert's career when, in 1985, it was moved from the roof onto a truck by a 75-tonne crane, driven to Switzerland, and the dish placed on the Gornergrat by means of a helicopter.

A unique interconnection of basic research with advanced engineering applications, such as the development of the receivers and the superconducting mixers for the Gornergrat KOSMA telescope, is a hallmark of the Cologne institute. For example, the NASA satellite SWAS (Submillimeter Wave Astronomy Satellite) carries an acousto-optical spectrometer developed at Cologne, and the institute has been strongly involved in the construction of instrumentation for the satellite program FIRST (Far Infra-Red Space Telescope, now renamed 'HERSCHEL') of the European Space Agency; Gisbert was one of the initiators of this project. Five Cologne-built receivers operating at 800 GHz (with four of them forming a 2×2 pixel array for imaging purposes) made it to Antarctica for the AST/RO (Antarctic Submillimeter Telescope and Remote Observatory) project together with four acousto-optical spectrometers. Furthermore, Gisbert has been involved in the detection of a number of molecules in interstellar space including vinyl cyanide C_2H_3CN , formic acid $HCOOH$, and methyl diacetylene CH_3CCCCH .

As the Iron Curtain still divided the world, Gisbert established strong links to colleagues on the other side of it, most notably in Czechoslovakia and in the Soviet Union. After the political change in Eastern Europe, these contacts could be intensified and substantial technology transfer could take place. An example of such a transfer from East to West is the application, in Cologne, of Russian very-high-frequency oscillators (backward wave oscillators and the OROTRON) for submillimeter-wave and Terahertz laboratory spectroscopy. The Cologne institute—with Russian participation—is now a world leader in this field. Technology transfer from West to East has led to the construction of a millimeter-wave spectrometer in Prague, covering the spectral range from 12 to 275 GHz. The strong international aspect of Gisbert's work has also manifested itself in him being one of the founders of LEA HiRes (Laboratoire Européen Associé for High Resolution

Spectroscopy), an association of several spectroscopy laboratories in Belgium, France, and Germany. In addition, Gisbert is known as the initial organizer of the Zermatt Conferences on molecular spectroscopy and its applications in astrophysics.

In Cologne, Gisbert established not only a highly productive scientific research operation but also an outstanding training center. He is an excellent and enthusiastic lecturer, able to attract and motivate students, whom he entertains and challenges, and provides with interesting research problems, with inventive ideas about how to solve problems, and with generous support and encouragement, as well as honest criticism, along the way. As a supervisor he has helped more than 40 students to obtain MSc degrees and more than 60 MSc's to obtain PhD degrees. Many of his former students have pursued distinguished academic careers or have achieved recognition in other areas. For example, the first German cosmonaut, in orbit in the Russian space station 'MIR,' was a former student of Gisbert's.

Gisbert Winnewisser is the author or co-author of more than 500 publications. He has received the Honorary Medal of the University of Helsinki (1985), the Max Planck Research Prize (together with E. Herbst, 1993), the Philip Morris Prize (together with R. Schieder, 1994), the Honorary Medal of the Ioannes Marcus Marci Spectroscopic Society (Prague, 1996) and the Historical Medal of the Charles University in Prague (2000). Most recently (2005), Gisbert received, together with R. Schieder, a 'Group Achievement Award' from NASA in recognition of his contributions to the SWAS project.

Many organizations have benefited from Gisbert's experience and knowledge. For example, he was a fellow of the European Space Agency from 1983 to 1990, a member of the Advisory Council of the Alexander-von-Humboldt Foundation from 1983 to 1999, a member of the Senate of the German Research Council (DFG) from 1986 to 1987, and a member of the Foundational Advisory Committee ('Stiftungsbeirat') of the University of Cologne from 1993 to 1998. Since 1997, he has been a member of the Jury of the Philip Morris Foundation.

Gisbert's momentum was interrupted in 1990 by an emergency bypass operation, and, in recent years, he has been increasingly slowed, but not stopped, by Parkinson's disease. He retired from the University of Cologne in 2001. As an emeritus professor, he continues to contribute to the scientific endeavor and the well-being of the I. Physikalisches Institut. Now, however, he allows himself more time in Bad Peterstal, where the Winnewisser clan manages to meet occasionally and enjoy together the Black Forest surroundings, and frequently—even there—they discuss physics...

On behalf of all Winnewisser students, associates, relatives, and friends, and on behalf of the editors of Journal of Molecular Structure, we congratulate Gisbert to his 70th

birthday and send him and Helga our very best wishes for the years to come.

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