

Dr. Helmut RAUCH

Professor Emeritus

Vienna University of Technology
Atominstitut
Stadionallee 2, 1020 Vienna, Austria

Tel: 0043-1-58 801-14100
Fax: 0043-1-58 801-14199
e-mail: rauch@ati.ac.at

Private Address:
Kefergasse 23/7/7, 1140 Vienna, Austria
Tel.: 0043-1-911 19 82
Cell phone: 0043 664 91 88 087

Career:

Born: January 22, 1939 in Krems/Donau, Austria
Parents: Johann Rauch, railway official and Hermine Rauch (nee Weidenauer)
Personals: since February 27, 1965 married to Annemarie Rauch (nee Krutzler).
Children: Dr. Peter Rauch (*Feb. 4, 1962), Mag. Dr. Astrid Bucher (*July 18, 1964) and Dipl.-Ing. Dr. Christoph Rauch (*May 10, 1970).

Education:

1948-1957 Federal secondary school (scientific bias) in Oberschützen/Burgenland
final examination on June 22, 1957
1957-1962 Study of Technical Physics at the Technical University, Vienna
Diploma on June 30, 1962
1962-1966 Doctoral thesis work at the Technical University, Vienna
"Anisotropic β -decay after the absorption of polarized neutrons"
Graduation on July 1, 1965

Occupational Career:

1962-1972 University assistant to Prof.Dr.G. Ortner
at the Atominate of the Austrian Universities, Vienna
1970 Professorial dissertation (Habilitation) at the Technical University,
Vienna, in neutron and reactor physics on April 16, 1970
1972 Appointment as a full professor in experimental and neutron physics
at the Technical University, Vienna, on March 11, 1972
1979-1980 One-year sabbatical at the Institut für Festkörperforschung
of the Kernforschungsanlage Jülich, Germany
1980-1996 Director of the Nuclear Physics Institute of the Technical University, Vienna
(alternately with Prof.Dr.G. Eder)
1972-2005 Director of the Atominate of the Austrian Universities, Vienna
2007 Retirement

Scientific Career:

267 scientific publications so far in the field of neutron and solid state physics and on
fundamental experiments in quantum mechanics.

Editor of the books "Neutron Interferometry", Clarendon Press, Oxford 1979 (together with U. Bonse) and "Matter Wave Interferometry", North Holland, Amsterdam 1988 (jointly with G. Badurek and A. Zeilinger) and "Neutron Interferometry", Clarendon Press, Oxford 2000 (together with S.A. Werner).

Co-editor of the journal "Kerntechnik" and the "Czechoslovak Journal of Physics".

Numerous talks at international conferences and participation in various conference advisory committees.

1962-1972 Installation of various beam tube experiments at the TRIGA Mark-II reactor of the Atominstitut of the Austrian Universities. Special Attention given to experiments with polarized neutrons (electronic neutron chopper, experiments on magnetic transition points), the development of novel gadolinium neutron detectors and the observation of neutron diffraction from ruled gratings.

1970-1985 Development of the first functioning perfect crystal neutron interferometer. Therewith proof of the coherence of widely separated neutron waves, first verification of the $4\text{-}\pi$ -symmetry of spinors and of the quantum mechanical spin-superposition as well as precision measurements of scattering lengths. Achievement of extreme energy and angular resolutions. These experiments were carried out using the neutron interferometer installation at the TRIGA reactor in Vienna and the new neutron interferometer installation at the High-Flux Reactor in Grenoble (in cooperation with the Dortmund University).

1980-1995 First test of a neutron-optically active neutron magnetic resonance system. Installation and test of a neutron resonator. Test measurements of quantum mechanics.

1995-now Verification of Schrödinger cat-like and squeezed neutron states, quantum post-selection experiments. Neutrons in micro-fabricated structures, verification of quantum contextuality, quantum state reconstruction, experiments with ultra-cold neutrons.

Teaching Activities:

Lectures on Neutron and Solid State Physics
Experiments in Nuclear and Particle Physics
Reactor Physics 1 and 2
Alternative Nuclear Energy Systems

Supervision of 40 master theses and 54 Ph.D. theses so far.

Memberships:

Austrian Physical Society (since 1965, chairman 1995/96 and 2005/06)
German Physical Society (since 1970)
Chemical-Physical Society (since 1971, chairman 1983/84)
Austrian Academy of Sciences (full member since 1990)
Academia Europaea (since 1990)
German Academy of Naturalists "Leopoldina", Halle (since 1995)

Awards:

1967 Felix Kuschenitz-Preis of the Austrian Academy of Sciences
1977 Erwin Schrödinger-Preis of the Austrian Academy of Sciences
1985 Wilhelm Exner-Medaille of the Austrian Trade Association
1986 Kardinal Innitzer Award
1992 Honorary Professor University of Science & Technology, Hefei, China
1993 Science Prize of the City of Vienna
2000 Ernst Mach Honorary Medal of the Czech Academy of Sciences
2006 Ludwig Wittgenstein Award of the Austrian Research Association
2010 Dr. h.c. award of the National Academy of Science of Ukraine

Offices held:

1978-1990 Member of the Austrian Reactor Safety Commission

1985-1990 Vice President of the Austrian Science Foundation
1990-1993 Member of Scientific Council Institut Laue-Langevin
1991-1994 President of the Austrian Science Foundation
1992-1994 Member of Physics Panel of the EU-HCM Program
1992-2003 Member of European Spallation Source Council
1995-1996 Member of Physics Panel EU-TMR Program
1996-1999 Member Executive Council of the European Science Foundation
2005-2008 Member of the Scientific Council Institute Laue-Langevin
2005-2009 Member General Assembly of IUPAP
2009 Guest scientist at the Institute Laue-Langevin in Grenoble, France
2010 Guest scientist at the Excellence Cluster "Universe" at TU Munich and TU Prague

Updated December 2010