

Jürg Fröhlich Biography

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Jürg Martin Fröhlich was born in Schaffhausen, Switzerland, on July 4, 1946. He is the son of the medical doctor Walter Fröhlich (1902-1984) and his wife Annemarie Fröhlich-Roth (1919-2011). Fröhlich attended the gymnasium (high school) in Schaffhausen, where he received a classical education and passed the *Maturität* exam.

Fröhlich then took up undergraduate studies in mathematics and physics at the Swiss Federal Institute of Technology (ETH) in Zürich (1965-1969). He passed his diploma in physics in the fall of 1969. From October 1969 until the summer of 1972, he worked at the Institute of Theoretical Physics of ETH under the supervision of Prof. Dr. K. Hepp. He received a PhD in theoretical physics with a thesis entitled “Über das Infrarot-Problem in einem Modell skalarer Elektronen und skalarer Bosonen der Ruhemasse 0”. He was then a research and teaching assistant at the physics department of the University of Geneva (1972-1973) and a research fellow in the mathematical physics group of Prof. Dr. A. Jaffe at Harvard University (1973-1974), before joining the faculty of the mathematics department at Princeton University as an assistant professor (1974-1977). In the spring of 1977, he was offered and accepted the position of *professeur permanent* at the Institut des Hautes Études Scientifiques (IHES), in Bures-sur-Yvette, France, where he worked from January 1978 until the summer of 1982. In 1982 he returned to ETH as a professor of theoretical physics. In 1985, he created the Centre for Theoretical Studies at the Institute of Theoretical Physics of ETH. Since the fall of 2011, he has emeritus status. Over the years, he has held various visiting positions, including at the Institute for Advanced Studies in Princeton, NJ (1984-1985, 2012-2014, 2016) and at IHES (1987, 1991, 2015, ...)—serving as a Louis-Michel visiting professor starting in 2001—among other places.

Fröhlich is best known for rendering the analysis of various models of statistical mechanics, many-body theory, and quantum field theory mathematically rigorous. He first became exposed to spin glasses during his stay at Princeton University and pursued work on the topic first with a graduate student at ETH, Anton Bovier, and later with a postdoc, Bogusław Zegarliński, notably proving various properties of the high-temperature phase and the existence of a phase transition in the Sherrington-Kirkpatrick model. He is presently working on various problems in quantum many-body theory and on the foundations of quantum mechanics.

Fröhlich is a member of the “Academia Europaea” (1993), a corresponding member of the “Berlin-Brandenburgische Akademie der Wissenschaften” and the “Akademie der Wissenschaften und der Literatur,” Mainz, a fellow of the American Mathematical Society (2013), and an international member of the US National Academy of Sciences (2020). Fröhlich has received the National Latsis Prize (1984) of the Fondation Latsis (Swiss National Foundation, SNF); the Dannie Heineman Prize in Mathematical Physics (1991) from the American Physical Society and the American Institute of Physics, together with Thomas C. Spencer,

“for their joint work in providing rigorous mathematical solutions to some outstanding problems in statistical mechanics and field theory”; the Marcel-Benoist Prize (1997) of the Fondation Marcel Benoist (SNF) “in recognition of his pioneering and fundamental work in the field of mathematical physics, in particular in describing phase transitions, electron localisation and the Quantum Hall effect”; the Max-Planck Medal (2001) of the Deutsche Physikalische Gesellschaft “In Würdigung seiner bedeutenden und exakten Beiträge zur Quantenfeldtheorie und deren Anwendung auf Quantenelektrodynamik, Phasenübergängen, ungeordnete Systeme und zum gebrochenzahligen Quantenhalbleffekt [in appreciation of his significant and accurate contributions to quantum field theory and its application to quantum electrodynamics, phase transitions, disordered systems and fractional quantum Hall effect]”; and the Henri Poincaré Prize (2009) of the International Association of Mathematical Physics “for his fundamental contributions to quantum field theory and statistical mechanics, which led to major advances in our understanding of physical systems with many degrees of freedom”.