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Robert Blinc

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Robert Blinc

Leading Slovene physicist Robert Blinc, a trailblazer in the use of nuclear magnetic resonance (NMR) for phase-transition and liquid-crystal studies, passed away due to complications from a protracted illness on 26 September 2011 in Ljubljana, Slovenia.

Robert was born in Ljubljana on 31 October 1933. He obtained his undergraduate degree in physics at the University of Ljubljana in 1958. Under the supervision of Anton Peterlin at the university, he did his PhD work on proton tunneling in ferroelectrics with short hydrogen bonds and received his degree in 1959. He then spent a post-doctoral year with John Waugh at MIT. Back in Ljubljana he joined the new NMR laboratory at the Jožef Stefan Institute and developed it into one of Europe's leading NMR facilities. Robert excelled at explaining experimental results through models that described their physical content. He became a world expert in the application of magnetic resonance to phase transitions.

Robert's main interest was ferroelectric materials; he started with hydrogen-bonded ferroelectrics, including proton glasses and incommensurate insulators, continued with relaxor ferroelectrics, and eventually studied multiferroics. His best-known early work is the Blinc-de Gennes model for hydrogen-bonded ferroelectrics and their proton tunneling mechanism. His further work included ferroelectric liquid crystals, pseudospin glasses, and fullerenes. Among numerous achievements, Robert and coworkers predicted the phason Goldstone mode in helical ferroelectric liquid crystals.

With Philip Pincus, Robert discovered a relaxation mechanism via nematic order fluctuation in liquid crystals; the mechanism is now known as the Pincus-Blinc model. He proposed and directed experiments that provided the first NMR detection of incommensurate phasons and amplitudons and measurements of their energy gaps. He determined the Edwards-Anderson order parameter in proton and deuteron glasses. Together with Rasa Pirc and Bosiljka Tadic, Robert developed the spherical random bond-random field model of



Robert Blinc

MARJAN SMERKE

relaxors. He revealed the nature of ferromagnetism in the organic ferromagnet TDAE-C60 and explained that the giant electromechanical effect in lead magnesium niobate-lead zirconate titanate relaxors can be traced to the existence of critical points in the phase behavior of the systems.

In 1961 Robert became a professor in the physics department of the University of Ljubljana. He supervised the PhD theses of 35 graduate students, many of whom have made important contributions to solid-state physics and are well-established professors. He became dean of the Jožef Stefan International Postgraduate School in 2004.

Robert collaborated with many scientists around the world and was a visiting professor at numerous educational institutions. For example, he worked at the University of Utah, where he became an adjunct professor; Argonne National Laboratory in Illinois; ETH Zürich; the Federal University of Minas Gerais in Brazil; and the University of Vienna. Among Robert's significant contributions to scientific organizations, he served as president of the International Steering Committee of the European Meeting on Ferroelectricity from 1986 to 1999 and as president of the European organization Groupement AMPERE from 1990 to 1996. He was president of the scientific council at the Jožef Stefan Institute for many years

and had served as dean of the faculty for natural sciences and technology at the University of Ljubljana.

The articles Robert published in numerous scientific journals have been cited more than 14 000 times. His best-known book, *Soft Modes in Ferroelectrics and Antiferroelectrics* (North Holland), written with Boštjan Žekš, was published in 1974, and his last book, *Advanced Ferroelectricity* (Oxford Science), was released in August 2011.

A pragmatic thinker, Robert stimulated research in diverse applications of NMR such as determining the oil contents in seeds; applying nuclear quadrupole resonance to detect illicit materials, including explosives, narcotics, and counterfeit medicines; and understanding relaxation mechanisms in lung tissue. He held 13 patents, including 3 US patents, jointly with J. William Doane, Janez Pirš, and others, that dealt with applications of liquid crystals. For his scientific work, Robert was recognized with several Slovene and international prizes. In 1977 the International Society of Magnetic Resonance presented him and Yevgeni Zavoiski with its ISMAR Prize, which is awarded every three years.

Robert had broad interests not only in science but also in current affairs; for more than 20 years he was a member of the influential Club of Rome and was president of its Slovenian Association since 2000. He also was a great chess enthusiast and at age 17 was the youth chess champion of Yugoslavia in 1951.

Robert enjoyed being with his family and liked nature, skiing in winter, hiking in summer, and swimming all year round. Visitors who saw him at the Jožef Stefan Institute remember him as a gracious host who helped them find apartments and vehicles and arrange hiking, skiing, and mushroom-hunting expeditions. Also memorable was his speaking style at conferences: clear but very rapid and full of ideas.

Robert was courteous and generous, even as a young man. He always maximized the credit due his collaborators and students while minimizing his own. He was devoted to the improvement of science everywhere, and his enthusiasm for science was truly international.

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