

David Sherrington Biography

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David Sherrington (October 29, 1941-) was brought up in Middlesbrough, UK. His parents were both first-generation schoolteachers, and his father went on to serve as headmaster. After passing a national selection examination at age 10, he attended St. Mary's College RC Grammar School, obtaining high marks, and was thus awarded a national university scholarship (State Scholarship).

He attended the Victoria University of Manchester, earning a First-Class Honours BSc in Physics (1962) and stayed for graduate studies, first earning a Diploma for Advanced Studies in Science (1963) under the supervision of Arvid Herzenberg, working on the first many-body study of correlations of electrons in small molecules, and then a PhD (1966) under the supervision of Sam Edwards, devising a new method of expansion in quantum many body theory, based on a maximal randomness self-consistency procedure within a functional integral/Lagrangian formulation.

He was appointed to his first faculty post in 1964, as an Assistant Lecturer in Theoretical Physics at Manchester, promoted to Lecturer in 1967. He spent 1967-1969 on leave as an Assistant Research Physicist (post-doc) with Walter Kohn, at the University of California San Diego (La Jolla), working on excitonic insulators, zero-gap semiconductors, and effective bosons and Bose condensates in Fermi systems. In 1969 he moved to Imperial College (London) as a Lecturer in Theoretical Solid State Physics, physically located within the experimental group of Bryan Coles. There, he climbed through the faculty ranks to (full) Professor, before leaving to serve as Wykeham Professor of Physics and Head of the Theoretical Physics Department at the University of Oxford in 1989. He became Emeritus in 2008.

Sherrington is a theoretical condensed-matter physicist, whose research interests have covered a broad range of topics, from purely abstract many-body theory, through several different solid state physics systems, to statistical mechanics and dynamics of novel models to elucidate and anticipate the workings of complex networks in many contexts, including hard optimization, neural networks and econophysics. Of particular interest for the present project, his formulation of the Sherrington-Kirkpatrick model in 1975 is one of the key milestones in the study of spin glasses that led to the formulation of replica symmetry breaking a few years later.

Throughout his career, Sherrington took a number of leaves elsewhere, most notably for the present project, at IBM Thomas J Watson Research Center (Yorktown Heights, NJ, USA, 1975), where he first collaborated with Scott Kirkpatrick. Other relevant associations include the Institut Laue-Langevin (Grenoble, France, 1976, 1977-79), where, with S. K. Ghatak, he introduced their eponymous model for an induced moment spin glass, the Schlumberger-Doll Research Center (Ridgefield, CT, USA, 1985), where he collaborated

with Nicolas Sourlas on a numerical study suggesting that there should be replica-symmetry-breaking spin glass effects in optimal bi-partitioning of random graphs of finite connectivity, the Center for Nonlinear Studies at Los Alamos National Lab (USA, several visits, Ulam Scholar 1995-96), where he was introduced to martensitic shape-memory alloys, leading him to propose analogies with experimental spin glasses. From 2004 until recently, he has been external Professor at the Santa Fe Institute (for complex systems science, NM, USA).

Sherrington also played a central role in structuring the complex systems/statistical physics community in Europe, serving as leader for a number of important multinational European networks, starting with EEC 'Stimulation Action' program "Statistical Physics of Complex Systems in Physics, Engineering and Biology" in 1987.

Sherrington was elected to Fellowship of the (UK) Institute of Physics in 1974, the American Physics Society in 1985, The Royal Society in 1994, the European Academy of Sciences in 2008, and the Academia Europaea in 2012. In 2001 he was awarded the Bakerian Medal and Lecture of The Royal Society, with lecture title "Magnets, microchips, memories and markets: statistical physics of complex systems", in 2007-the Dirac Medal and Prize of the Institute of Physics "for his pioneering work in spin glasses", in 2009 the Scott Lectures in Physics at Cambridge, entitled "Physics and Complexity", and, in 2010, the Blaise Pascal Medal in Physics of the European Academy of Sciences.