Nicolas Sourlas Biography

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Nicolas Sourlas (May 22, 1943-) was born in Athens, Greece, the son of Kimon Sourlas, a lawyer, and Aikaterini.

Sourlas first studied at the National Technical University of Athens, obtaining an engineering diploma in 1966. He then obtained a diplôme d'études approfondies (DEA) in theoretical physics from Université Paris-Sud at Orsay (1968), where he also wrote a thèse d'état (1975) under the supervision of Claude Bouchiat and Jean-Loup Gervais. In 1970, he was hired as CNRS chargé de recherche at the Laboratoire de physique théorique d'Orsay. In 1974, he moved to the Ecole Normale Supérieure in Paris, together with the other members of the Bouchiat-Meyer group, and went for a postdoc in Kenneth Wilson's group at Cornell the following year (1975-1976). He later became directeur de recherche (1980), and is emeritus since 2008. In 1985, he spent seven months at the Schluberger-Doll research lab in Richfield, Connecticut, where he met David Sherrington and collaborated with him and in 1987 another seven months at the IBM European Research Center in Rome. During that stay he also collaborated with Parisi and Virasoro. In 1990-1991 he was a member of the Institute of Advanced Study in Princeton, NJ.

Sourlas was trained as a high-energy physicist. After coming back from Cornell he became a close collaborator and friend of Giorgio Parisi. They worked first on lattice gauge theories where, in collaboration with Jean-Michel Drouffe, they discovered the branched polymer phase of gauge theories at large dimensions. Then Parisi and Sourlas discovered a supersymmetry and dimensional reduction in the random field Ising model. This supersymmetry allowed them to compute the exact value of the critical exponents of branched polymers in two and three dimensions. This case might be the only one for which the exact values of critical exponents in three dimensions are known. This advance was also at a turning point for the statistical mechanics of disordered problems. Sourlas became specifically involved with spin glasses in the early '80s, notably co-authoring with Mézard, Parisi, Toulouse and Virasoro, a pair of influential papers on the nature of the spin-glass phase and the discovery of ultrametricity. He later worked on applications of spin glass ideas in the context of optimization and especially of error-correcting codes. His sustained engagement with the LIDS group at MIT was instrumental to introducing ideas from statistical mechanics to that community. Sourlas also played a key organizational role as part of various spin-glass related European networks.

For his various seminal contributions to statistical mechanics, Sourlas has been granted the 2004 Aniuta Winter-Klein Prize.