Michael Aizenman Biography

August 12, 2021. Patrick Charbonneau

Michael Aizenman (August 28, 1945–) was born at the end of WWII in Nizhny Tagil, Soviet Union (now, Russia), where his parents, Gedaliahu and Celina, found themselves temporarily displaced from Poland. Upon their return, they learned that no other member of their families had survived. His mother died in Warsaw nine years later. In 1957, the remaining family moved to Israel. After a year which he spent in a kibbutz, they rejoined in Jerusalem. In time, as a reservist of the Paratrooper Brigade's communication unit, Aizenman served in the 1967 Six-Day war and the 1973 Yom Kippur war. In 1967, he married Marta Gershanik[1], with whom they have two children, and a grandson.

Aizenman obtained his BSc in physics and in mathematics (1965-1969) from the Hebrew University of Jerusalem, and his PhD in mathematical physics (1975) from the Belfer Graduate School of Science of Yeshiva University, advised by Joel Lebowitz. He held post-doctoral appointments as a Visiting Member of the Courant Institute of Mathematical Sciences (1974-1975) and a Research Associate at Princeton University (1975-1977), in the Departments of Physics and Mathematics under the mentorship of Eliott Lieb. He joined Princeton Physics as assistant professor (1977-1982), and later joined the faculty in the departments of mathematics and physics at Rutgers University (Associate Professor (1982), Professor (1984), and Professor II (1986)), before taking up a professorship (1987-1990) at the Courant Institute of Mathematical Sciences, shared with the New York University Physics Department. Since 1990, he has been Professor of Physics and Mathematics at Princeton University. Over the years, he has also held several visiting positions: at the Institute of Advanced Studies, University of Paris, and Institut des Hautes Études Scientifiques (1984-1985), was a Fairchild Distinguished Scholar at Caltech (1990), a visiting professor at Tel Aviv University (1998), ETH Zürich (1998), and at the Weizmann Institute of Science (2003-today). Between 2001-2012 he served as the editor-in-chief of Communications in Mathematical Physics.

Aizenman made seminal contributions to the mathematical description of disordered systems and random cluster models. He has notably demonstrated the uniqueness of critical points of Ising and percolation models, established the phenomenon of upper critical dimension for Ising and related systems, and developed the fractional moment method to characterize disordered-induced localization in quantum systems. With Joel Lebowitz, his former mentor and at that time colleague, and David Ruelle, Aizenman also first formalized part of the solution of the Sherrington-Kirkpatrick model. He subsequently worked on aspects of hierarchical Gibbs state decompositions in related models.

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[1] "Dr. Marta Aizenman, Psychologist," https://www.martaaizenman.com/ (2007). (Consulted September 5, 2022). She is the daughter of Simón Gershanik: https://es.wikipedia.org/wiki/Sim%C3%B3n_Gershanik

Aizenman is a member of the National Academy of Sciences of the U.S.A (1997), a foreign member of the Academia Europaea (2016), and a member of the American Academy of Arts and Sciences (2017). He held A. P. Sloan and A. Gugenheim Fellowships, and is a fellow of the American Mathematical Society (2013). His work was recognized in a number of awards: the "Guido Stampacchia" Prize (1982) from Scuola Normale Superiore di Piza; the Norbert Wiener Prize in Applied Mathematics (1990) from the American Mathematical Society "for his outstanding contribution of original and non-perturbative mathematical methods in statistical mechanics by means of which he was able to solve several long open important problems concerning critical phenomena, phase transitions, and quantum field theory"; the Brouwer Medal of the Royal Netherlands Academy of Sciences (2002); the Dannie Heineman Prize in Mathematical Physics (2010) "for his development of the random current approach to correlations which has had an impact on a wide variety of problems, especially his rigorous non-perturbative proof of the triviality of ϕ^4 field theory"; and the Henri Poincaré Prize from the International Association of Mathematical Physics (2018) "for his seminal contributions to quantum field theory, statistical mechanics, and disordered systems in which he pioneered innovative techniques that demonstrate the beautiful and effective interplay between physical ideas, mathematical analysis, geometric concepts, and probability theory". He has also been named Doctor Honoris Causa by Université de Cergy-Pontoise (2009) and by the Technion – Israel Institute of Technology (2018).