



Brin MRC Distinguished Lecture

Some Recent Progress in Spin Glass Theory

Sourav Chatterjee, Stanford University

Date: November 8, 2023

Time: 3:15 PM

Location: 3206 Kirwan Hall



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Abstract

Spin glasses are magnetic materials with strange properties. The theory of spin glasses had had revolutionary impact in various parts of physics and mathematics, going far beyond its original intention and helping us understand the structures of complex objects in myriad settings, ranging from probability theory to machine learning and neural networks.

However, most of the rigorous mathematical tools developed for analyzing spin glass models apply only to mean-field spin glasses. The more realistic short-range models have remained out of the reach of rigorous mathematics until now.

Dr. Chatterjee will talk about some recent breakthroughs in this area, together with a broad overview of the main open questions and connections with problems beyond spin glasses.

About the Speaker

Sourav Chatterjee received his PhD degree in statistics from Stanford University in 2005. He has been on the faculty at UC Berkeley, the Courant Institute, and, since 2013, at Stanford University. His areas of interest are probability theory, statistics, and mathematical physics.

Dr. Chatterjee was awarded a Sloan Research Fellowship in mathematics, the Tweedie New Researcher Award, the Rollo Davidson Prize, the Doeblin Prize, the Loeve Prize, and the Infosys Prize. He gave a Medallion Lecture of the Institute of Mathematical Statistics in 2012 and was an invited speaker at the International Congress of Mathematicians in 2014. He was elected a Fellow of the Institute of Mathematical Statistics in 2018, and a Fellow of the Royal Society in 2023.