Stochastic Webinar

Statistical mechanics of the focusing nonlinear Schrödinger equation

Leonardo Tolomeo (University of Edinburgh)

Leonardo Tolomeo received his PhD at the university of Edinburgh in 2019. He then worked as a postdoc at the university of Bonn from 2019 to 2022, and was hired as an assistant professor at the University of Edinburgh in 2022. He was recently awarded the 2024 Bernoulli Society New Researcher Award for his achievements in probability.

Abstract: In a seminal paper, Lebowitz-Rose-Speer (1988) introduced the grand-canonical ensemble for the focusing nonlinear Schrödinger equation (NLS). This corresponds to the Φ^p_d measures of quantum field theory, up to the sign of the interaction potential, and the introduction of a mass cutoff.

It has recently been discovered that these measures of ten undergo phase transitions, via a series of different mechanisms depending on the dimension, the size of the mass cutoff, and the strength of the interaction. In this talk, I will describe several of these transitions and discuss the various mechanisms at their source. We will focus our attention to the 1-dimensional torus and Euclidean space, and to the 3-dimensional torus.

This talk is based on joint works with T. Oh (University of Edinburgh) and P. Sosoe (Cornell University), T. Oh (University of Edinburgh) and M. Okamoto (University of Osaka), and with H. Weber (Münster University).

讲座时间：

2023.11.23周四 下午16:00-17:00

会议地点：ZOOM会议室会议ID：354 143 7366 密码：123456

主办单位：

中科院数学与系统科学研究院应用数学所

北京理工大学数学与统计学院

Navigating Privacy, Utility, and Fairness in Generative Data Science

报告人： Guang Cheng（UCLA）

时间：2023-11-23 14:00-15:00

地点：Tencent Meeting: 830-899-630

Abstract: Embark on a journey into the heart of Generative Data Science, the cornerstone of the evolving landscape of Generative AI. The talk centers on a meticulous statistical evaluation of generative data, specifically addressing three critical dimensions: the extent of privacy preservation, the optimization of utility in downstream tasks, and the reinforcement of fairness through generative data methodologies. Time permitting, a brief introduction to the UCLA Trustworthy AI Lab will be offered, providing a statistical perspective on "Generative Data Science" and its profound impact on shaping the trustworthy landscape of artificial intelligence.

About the Speaker:

Guang Cheng is a Gradudate Vice Chair, Professor of Statistics and Data Science at UCLA, and also leading the Trustworthy AI Lab (https://www.stat.ucla.edu/~guangcheng/). He received his BA in

Economics from Tsinghua University in 2002, and PhD in Statistics from University of Wisconsin-Madison in 2006. His research interests include generative data science, statistical machine learning and deep learning. Cheng is an Institute of Mathematical Statistics Fellow, Simons Fellow in Mathematics, NSF CAREER awardee and was also a member in the Institute for Advanced Study, Princeton.