香 港 大 學
THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Frontiers of Mathematics Lecture

Liouville Quantum Gravity: from Random Planar Maps to Conformal Field Theory

Abstract

Originating in theoretical physics, Liouville quantum gravity (LQG) has been an important topic in probability theory and mathematical physics in the past two decades. In this talk, we review two aspects of this topic. The first is that LQG describes the random conformal geometry of the scaling limit of random planar maps. We highlight the convergence of random planar maps under discrete conformal embedding, where couplings between LQG and the Schramm-Loewner evolution (SLE) play a key role. The second aspect is the connection to conformal field theory (CFT). Here we highlight the interplay between Liouville CFT and the SLE/LQG coupling, the CFT description of 2D quantum gravity coupled with conformal matter, and applications to SLE and 2D statistical physics. This talk is based on the 2026 ICM proceeding joint with Nina Holden.



Professor Xin Sun

Peking University

Date :
November 20, 2026 (Friday)

Time :
5:00 – 6:00 pm

Venue :
KK201, K.K. Leung Building, HKU

Biography

Xin Sun is a Boya Distinguished Professor at Peking University, working at the Beijing International Center for Mathematical Research. He received his bachelor's degree from Peking University in 2011 and his Ph.D. from MIT in 2017. He has previously held positions at Columbia University and the University of Pennsylvania, and joined Peking University in September 2023. His research areas are probability theory and mathematical physics. He received the Bernoulli Society New Researcher Award in 2020 and the NSF CAREER Award in 2021; in 2023 he was awarded the Rollo Davidson Prize; in 2024 he received the Frontiers of Science Award at the International Congress of Basic Science and the Alibaba DAMO Academy Young Fellow Award. He is an invited speaker at the 2026 International Congress of Mathematicians.

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