上海数学与交叉学科研究院

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Shanghai Institute for Mathematics and Interdisciplinary Sciences

SIMIS Seminar series on Quantum computing, Quantum simulation and Strongly-correlated systems

Prof. Xianhui Ge

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"Zeno's Paradox and the Black Hole Information Loss Problem"

Abstract

In this presentation, we will explore the conflict between the unitarity of quantum mechanics (information conservation) and the absoluteness of event occurrence in general relativity, a key challenge faced by quantum gravity theory. By drawing an analogy with Zeno's paradox and its resolution within Newtonian mechanics, we will conduct a detailed analysis of the roles played by the Hawking saddle point and the replica wormhole saddle point during black hole evaporation.

Biography of the speaker

Professor Xianhui Ge received his Ph.D. from the Shanghai Astronomical Observatory, Chinese Academy of Sciences, in 2006. From 2006 to 2008, he conducted postdoctoral research at the Asia Pacific Center for Theoretical Physics in South Korea. Since 2008, he has been working at the Department of Physics, Shanghai University, where he currently serves as the department head. His research primarily focuses on gravitation and cosmology, AdS/CFT correspondence, black hole physics, and strongly coupled quantum many-body systems. He is dedicated to the study of gauge-gravity duality in strong coupling quantum transport, the black hole information loss problem, and the quantum many-body SYK (Sachdev-Ye-Kitaev) model.

Date and Place: January 10th 2025, 13:30h-14:30h. Room: 1410. Send comments or questions to: Hamed Adami (Host) hadami@simis.cn or Miguel Tierz (Seminar organizer) to tierz at simis.cn