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OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY
沖縄科学技術大学院大学

THEORETICAL SCIENCES VISITING PROGRAM

TSVP TALK

What Can Quantum Field Theory Teach Us About Black Holes (And Vice Versa)?

2024
THU. **Apr. 25**

15:00–16:00

HYBRID L5D23, ZOOM



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The existence of black holes is a remarkable prediction of Einstein's General Theory of Relativity. The prediction was spectacularly confirmed by the detection at LIGO in 2015 of the gravitational waves emitted by a black hole merger. Despite this, the status of black holes in a more complete description of our universe including quantum mechanics has long remained mysterious, presenting puzzles for theorists which still remain unsolved.

The AdS/CFT Correspondence provides a striking and unexpected relation or "duality" between gravity and the quantum field theories which underly our understanding of particle physics. AdS/CFT has provided new tools for studying the physics of black holes and has also led to progress in understanding the behaviour of QFT at strong coupling. In my talk, I will review the correspondence and some of the insights it has provided. I will also discuss the future prospects for resolving some of the hardest outstanding questions.

University of Cambridge

Nick Dorey

Nick Dorey received his PhD from Edinburgh University in 1991 and then held postdoctoral and junior faculty positions at Los Alamos National Laboratory, University of Washington and Swansea University. He has been a Professor of Theoretical Physics at the University of Cambridge since 2007. He is currently visiting OIST as a TSVP Visiting Scholar.



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