Department of
Theoretical Physics

Quantum Space-Time Seminar

Black Hole Critical Collapse in Infinite Dimensions

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Date and time: **11:00 AM, 16 Mar, 2026**
Venue: **A 304**

Zoom link will be sent separately.

Abstract: Numerical studies of gravitational collapse indicate surprising universality emerging from complex dynamics. One example is that near the threshold of black-hole formation, the resulting black hole mass obeys a power law with a universal critical exponent. Despite extensive numerical evidence, analytic understanding remains limited. Using the number of spacetime dimensions as an expansion parameter, we obtain analytic control in a toy model of critical collapse through a separation of the spacetime into distinct regions. I will show how this separation into regions emerges and identify the scalings required to resolve them, before briefly presenting the resulting prediction for the critical exponent.