JITCP Seminar

THE UNIVERSITY OF HONG KONG
HKU-UCAS JOINT INSTITUTE OF THEORETICAL AND COMPUTATIONAL PHYSICS
[Thursday Afternoon, 4:00 pm, In Person]

Critical Phenomena on a Quantum Fuzzy Sphere: Uncovering Conformal Symmetry in the 3D Ising Transition

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We introduce a scheme to study the phase transition and critical phenomena on the space-time geometry $S^{d-1} \times R$, using the "fuzzy (non-commutative) sphere" regularization. As a showcase, we apply this scheme to the quantum version of 3D Ising phase transition. We demonstrate almost prefect state-operator correspondence (i.e. radial quantization), an important property of conformal field theory. The complete conformal data (scaling dimensions, operator product expansion coefficients, etc.) have been explicitly worked out, many of which go beyond the current conformal bootstrap computation. Moreover, our result directly elucidates the emergent conformal symmetry of the 3D Ising transition, a conjecture made by Polyakov half a century ago.

In Person Seminar
Thursday, October 5, 2023, 4:00 pm
Room 522, 5/F, Chong Yuet Ming Physics Building, HKU