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Simulating the Euclidean and Lorentzian IKKT model with deformations

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Recently the Euclidean IKKT model with deformation preserving 16 supersymmetries has attracted a lot of attention. In particular, the partition function was evaluated exactly by applying the SUSY localization method, and the "time-less holography" was discovered. Moreover, it was found that the original IKKT model is NOT retrieved in the limit of removing the deformation. Here we provide a new understanding of this intriguing property of the deformed model by performing numerical simulations based on explicit calculations of observables that probe the emergent space-time. We also investigate the Lorentzian IKKT model with analogous deformations by numerical simulations, and present some results suggesting the emergence of (3+1)-dimensional expanding space-time.

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