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Monte Carlo studies of the phase transition in the SUSY-deformed IKKT matrix model

We perform Monte Carlo simulation of SUSY-deformed Euclidean IKKT matrix model for matrix size N=3, and focused on the phase transition from the fuzzy-sphere phase to the commuting phase. We provide a complete understanding of the phase structure with respect to the deformation parameter. In the present N=3 case, we can use the reweighing method to overcome the sign problem and use the parallel tempering to overcome the multimodality.

Presenter: CHAU, Tin-Long

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