

Signature change of the space-time in the type IIB matrix model

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We perform numerical studies of the type IIB matrix model, which was proposed as a nonperturbative formulation of superstring theory in 1996. In our study, we apply the complex Langevin method in order to overcome the sign problem, which occurs in Monte Carlo simulations. In particular, we investigate a scenario on how the signature of space-time could be determined dynamically in this model and discuss the possibility of the emergence of the (3+1)D expanding universe.

Presenter: Dr HATAKEYAMA, Kohta (KEK)

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