Contribution ID: **47** Type: **not specified**

Complex Langevin Simulation of 2D U(1) gauge theory with a theta term

Thursday, 5 December 2019 15:00 (3 hours)

The Monte Carlo simulation of gauge theories with a theta term is quite difficult due to the sign problem. The complex Langevin method is a promising approach to solve this problem. We applied this method to the 2D U(1) gauge theory, which is analytically solvable, in order to check the validity of the method. We were able to reproduce the exact results in the whole region of -pi <= theta <= pi by using the definition of the topological charge defined by the log of plaquettes and by introducing a puncture on the 2D torus. We also discuss the application of the method to the 4D SU(N) case.

Presenter: Mr MATSUMOTO, Akira

Session Classification: Poster