



The 177th HENPIC seminar

Quantum Simulation for Phase Transitions

Speaker: Fanyi Zhao (赵凡怡)

November 10th, 2022, Thursday, 10:30 am (UTC+8)

Zoom meeting ID: 421 173 735, passcode: 644179

ABSTRACT:

The Nambu-Jona-Lasinio (NJL) model has been widely studied for investigating the chiral phase structure and chirality charge of strongly interacting matter. The study of the thermodynamics of field theories within the framework of Lattice Field Theory is limited by the sign problem, which prevents Monte Carlo evaluation of the functional integral at a finite chemical potential. Using the quantum imaginary time evolution (QITE) algorithm, we construct a quantum simulation for the (1+1) dimensional NJL model at finite temperatures, chemical potentials and chiral chemical potentials. We observe consistency among digital quantum simulation, exact diagonalization and analytical solution, indicating further applications of quantum computing in simulating QCD thermodynamics.

ABOUT THE SPEAKER:

Fanyi Zhao graduated from University of Science and Technology of China (USTC) in 2018 and is currently a Ph.D. student at University of California Los Angeles (UCLA) under the supervision of Prof. Zhongbo Kang. Her work at UCLA is supported by Mani L. Bhaumik Institute for Theoretical Physics and Center for Quantum Science and Engineering. Her research interests include strong interaction, Quantum Chromodynamics (QCD), jet physics and applications of quantum computing on QCD.



HENPIC website: <https://indico.ihep.ac.cn/event/11115>

Sponsored by Guangdong Major Project of Basic and Applied Basic Research(2020B0301030008)

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