No.202540

Academic Presentations in Physics
物理学系列学术报告

报告题目：**Exact results of integrable quantum circuits from algebraic geometry**

报 告 人：刘畅硕士研究生，东南大学

报告时间：**2025年12月18日（星期四）上午10:30**

报告地点：长安校区物理楼**856**

报告摘要：

Quantum simulators enable the exploration of strongly correlated systems beyond the reach of classical computation. To support their accurate calibration, we exactly evaluate correlation functions of spin-operator strings in integrable quantum circuits. By employing techniques from algebraic geometry, we derive exact analytical expressions for the correlation functions in real and Fourier space. In real space, an analysis of the Lee–Yang zeros of the correlation functions reveals phase transitions in the quantum circuit as system parameters are varied. In Fourier space, we extend the methods from our previous work to derive analytical expressions for the special case corresponding to roots of unity. These results deepen our theoretical understanding of integrable quantum dynamics and serve as precise benchmarks for quantum simulation platforms.

报告人简介：

刘畅，2024年本科毕业于东南大学物理学院。现为东南大学丘成桐中心在读硕士研究生，导师为江云峰教授。现研究方向为计算代数几何在可积性的应用，全息可积性，共形自举。