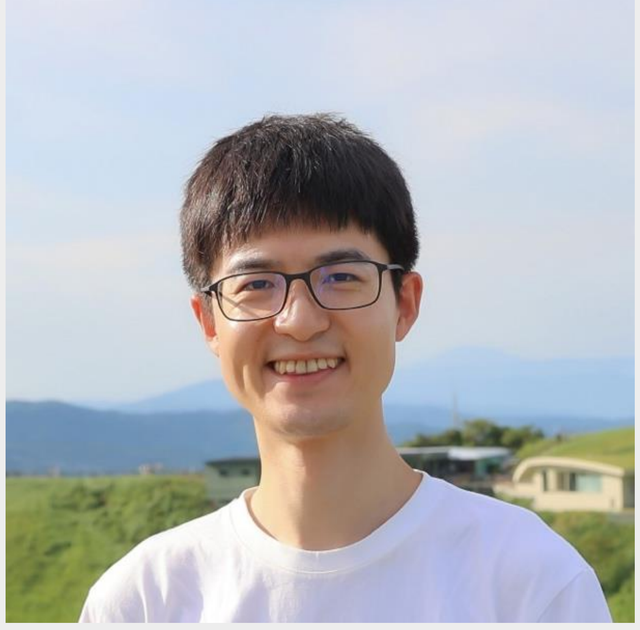
核物理与核技术国家重点实验室学术报告

— 核物理前沿与交叉专题

第13讲

Graph Neural Networks for High Energy Physics



曲慧麟　博士

欧洲核子研究中心

时间2024年3月28日(星期四) 10:00-11:00

地点　北京大学物理楼西楼B105

报告摘要　报告人简介

Machine learning has revolutionized the analysis of large-scale data samples in high energy physics (HEP) and greatly increased the discovery potential for new fundamental laws of nature. Specifically, graph neural networks (GNNs), thanks to their high flexibility and expressiveness, have demonstrated superior performance over classical deep learning approaches in tackling data analysis challenges in HEP. In this talk, Dr. Qu will go through the fundamentals of GNNs, the design of physics-driven GNN architectures, and their applications in solving data analysis challenges in ongoing and planned HEP experiments. Prospects and possible future directions will also be discussed.

Dr. Huilin Qu is a staff research physicist at CERN. He received his B.S. degree from Peking University in 2014, and Ph.D. from University of California, Santa Barbara in 2019. He was a postdoctoral researcher at UCSB (2019-2020) and, subsequently, a senior research fellow at CERN (2020-2022). His research has focused on searches for new physics and measurements of the Higgs boson properties with the CMS experiment at the CERN LHC, particularly using novel approaches and advanced machine learning techniques. He played a key role in searches for Higgs boson decay to a pair of charm quarks, for Higgs boson pair production in the high-momentum regime, and for supersymmetric partners of the top quark. In addition, he proposed a series of novel deep-learning approaches for jet tagging, which substantially improved the performance and have been widely adopted at the LHC and beyond.

欢迎各位老师、同学参加！

主持人

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