

## The 244th HENPIC seminar by Aiqiang Guo from IMP at 10:30 on March 19th, Beijing time

Title: Introduction to the Hyperon-Nucleon Spectrometer at HIAF

Abstract:

The High Intensity heavy-ion Accelerator Facility (HIAF) in Huizhou is a domestically developed large-scale scientific installation delivering the world's highest-intensity ion beams. The Hyperon-Nucleon Spectrometer (H-NS) at HIAF aims to explore fundamental questions in hadron spin structure through precision measurements of  $\Lambda$  hyperon and proton polarization. Utilizing HIAF's proton and heavy-ion beams in the 3–20 GeV energy range, the experiment will investigate the production mechanism, energy dependence, and medium effects of hyperon polarization in pp, pA, and AA collisions. H-NS incorporates advanced technologies including high-resolution silicon pixel detectors, AC-LGAD fast-timing detectors, and a carbon-foil baryon polarimeter to achieve vertex reconstruction, particle identification, and polarization measurements. This project will validate theoretical models of quark spin transfer to hyperons and accumulate critical technologies for future facilities such as the Electron-Ion Collider in China (EicC), serving as a vital experimental platform bridging nuclear and particle physics.

Biography:

Dr. Aiqiang Guo has long been dedicated to high-energy physics experimental research, participating in major international collider experiments including China's BESIII, Japan's Belle II, and the US GlueX. He has been deeply involved in physics analysis, detector R&D, and track reconstruction algorithm development. His work on BESIII yielded significant results in charmonium spectroscopy, and he contributed to the software of the CGEM detector in the BESIII inner tracker upgrade project. As a key Belle II member, he participated in magnet mapping and track reconstruction software development. He leads the tracker R&D for China's Electron-Ion Collider (EicC) and serves as convener of its Heavy Flavor Physics group. He also spearheaded the development of track reconstruction algorithms for the CEE TPC and currently leads the detector design and physics simulation for the H-NS project at HIAF.

### Summary