

Hyperon-Nucleon Spectrometer at HIAF

Hyperons were found to be polarized in p-Be collisions at Fermilab as early as 1976, 12 years before the EMC results sparked the “proton spin crisis.” Since then, polarized Lambda hyperons have been observed in electron-positron, proton-proton, and proton-ion collisions. However, unlike the extensive study of nucleon spin structure, the origin of Lambda polarization lacks systematic investigation, both theoretically and experimentally. Starting in 2026, the High Intensity heavy-ion Accelerator Facility (HIAF) in Huizhou, China, will deliver high-intensity proton beams (up to ~ 10 GeV) and various ion beams. This talk presents a proposal for a Hyperon-Nucleon Spectrometer at HIAF, designed to perform multi-dimensional mapping of Lambda polarization in fixed-target p-p, p-A, and A-A collisions.

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