Contribution ID: **4** Type: **Poster**

Development of Detector and Trigger System for 1.6 GeV Proton Test Beam at CSNS

Wednesday, April 17, 2024 5:10 PM (5 minutes)

The High-energy Proton Experiment Station (HPES) is currently being constructed as part of the CSNS-II project. The 1.6 GeV protons are extracted from the Rapid Cycling Synchrotron of CSNS and directed to the HPES in the form of "single particle beam". Test terminals have been designed within the HPES to facilitate the completion of beam tests. The primary objective of the HPES test terminals is to serve as an advanced detector test platform for the development of High Energy Physics in China. As such, a beam telescope is designed to achieve a proton tracking accuracy of < 10 μm and a proton energy measurement system is designed to achieve an energy resolution of < 1% at 1.6 GeV. Moreover, the HPES is expected to play an important role in various other fields, including high energy proton imaging and the pre-testing of aerospace experiments. This presentation will provide an overview of the design progress and prospects of the HPES test terminal.

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Session Classification: Poster session