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Design and Operation of the Forward Time Projection Chambers at NA61/SHINE

Hadron production measurements are critical for making informed predictions of neutrino flux in accelerator-based neutrino experiments. The NA61/SHINE experiment at CERN's Super Proton Synchrotron (SPS) measures differential and total production cross sections for various reactions relevant to the generation of neutrino beams. Recently, to cover the previously un-instrumented forward region of NA61/SHINE's phase space, a series of three Time Projection Chambers (TPCs) were constructed and installed. These TPCs, which are subject to a significant particle intensity, feature a new tandem field cage design enabling rejection off-time particles. Cross-section measurements in this forward region are necessary for current and future accelerator-based neutrino experiments to achieve their physics goals.

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