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Hadron production measurements for neutrino experiments at NA61/SHINE

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Current and future accelerator-based neutrino experiments require precise estimations of their (anti)neutrino fluxes. The (anti)neutrino flux uncertainty primarily arises from insufficient precision in understanding primary and secondary hadron-nucleus interactions in the target and beamline materials. The SPS Heavy Ion and Neutrino Experiment (NA61/SHINE) at CERN has developed a dedicated program to measure hadron production in various hadron-nucleus interactions using thin and replica targets for many neutrino experiments. Previous measurements from NA61/SHINE have greatly reduced the (anti)neutrino flux uncertainty in the T2K experiment. This contribution will present the recent results and ongoing hadron production measurements in NA61/SHINE, the impact of recent NA61/SHINE results on reducing flux uncertainty in the DUNE experiment, as well as our plans following the Long Shutdown 3 of the accelerator complex at CERN.

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