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Neutral Meson Production in Low-Energy Diffractive Processes with Pythia 8

This work presents a study of neutral meson production in diffractive collisions using the Pythia8 event generator. Cross sections and momentum transfer distributions are analyzed for double diffractive processes in a fixed-target scheme at beam energies of 10, 39.1, and 40 GeV. The analysis compares the SoftQCD and LowEnergyQCD physics scenarios, assessing their performance in describing diffractive neutral meson production. The results show stability in diffractive production in the high-energy regime and validate the hierarchy of cross sections predicted by non-perturbative QCD.

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