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Role of Deck-like backgrounds in diffractive production of $\pi^-\pi^-\pi^+$ and $\pi^-\pi^0\pi^0$ systems at COMPASS

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Collaboration

COMPASS

Abstract content

The COMPASS experiment is a multi-purpose fixed-target spectrometer located at CERN Super Proton Synchrotron aimed at studying the structure and spectrum of hadrons. The numerous results in spectroscopy of light mesons were obtained by investigations of various diffractive-dissociation reactions with 190 GeV/c π^- beam impinging on liquid-hydrogen target. The flagship reaction is $\pi^- p \to \pi^-\pi^-\pi^+ p$ with the worlds largest statistics of more than $5 \cdot 10^7$ events. The charge-partner reaction is $\pi^- p \to \pi^-\pi^0\pi^0 p$ with statistics of about $4 \cdot 10^6$ events. The data clearly demonstrates signals of mesonic resonances and also features the presence of non-resonant coherent background called Deck mechanism. We will present studies of a model of the Deck process and compare it to the COMPASS data for both $\pi^-\pi^-\pi^+$ and $\pi^-\pi^0\pi^0$ final states.

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