

Light-meson spectroscopy with COMPASS

Thursday, 15 March 2018 11:30 (30 minutes)

COMPASS is a multi-purpose fixed-target experiment at the CERN Super Proton Synchrotron aimed at studying the structure and spectrum of hadrons. One of the main goals of the experiment is the study of the light-meson spectrum. In diffractive reactions with a 190 GeV/c negative pion beam, a rich spectrum of isovector mesons is produced. The resonances decay typically into multi-body final states and are extracted from the data using partial-wave analysis techniques. We have performed the so far most comprehensive analysis of this kind on the $\pi^-\pi^-\pi^+$ final state, for which COMPASS has acquired a large data set of 46 million event. In a novel approach, we take into account the dependence of the production process on the squared four-momentum transfer t from the beam to the target particle. As a consequence, we are able to better separate resonant and non-resonant contributions and we extract for the first time the dependence of the resonant and non-resonant amplitudes on t . We will present results and discuss the challenges of this analysis.

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Session Classification: Amplitude analysis and Light Quarks