

Meson Spectroscopy at COMPASS

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on behalf of the COMPASS collaboration

In addition to constituent $q\bar{q}$ pair configurations, four quark states or gluonic excitations like hybrids or glueballs are also expected to contribute to the mesonic spectrum. The most promising way to identify such states allowed by QCD is the search for J^PC quantum number combinations which are forbidden in the constituent quark model. The fixed target COMPASS experiment at CERN offers the opportunity to search for such states in the light quark sector with an unprecedented statistics.

First studies of diffractive reactions of 190 GeV/c pions were carried out by COMPASS during a pilot run in 2004.

In a first analysis, the three charged pion final state was studied.

A Partial Wave Analysis (PWA) with 42 waves including acceptance corrections through a phase-space Monte Carlo simulation of the spectrometer was performed.

The exotic $\pi_1(1600)$ meson with quantum numbers $J^PC = 1^-+$ has been clearly established in the ρ - π decay channel

with a mass of $1660 \pm 0.010(\text{stat})$ MeV and a width of $0.269 \pm 0.021(\text{stat})$ MeV.

The final state with 5 charged pions was also investigated.

Results from that study will also be presented.

The improved detectors performance in 2008 allows us to study besides these channels further diffractively and centrally produced resonances, neutral ones as well as charged ones. First results of the ongoing analysis of the 2008

data taking period, using a 190 GeV/c pion beam on a hydrogen target will be given.

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