

Non-Strange Light-Meson Spectroscopy at COMPASS

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The COMPASS experiment is a multi-purpose fixed-target experiment at the CERN SPS. Part of its physics program is the study of non-strange light mesons produced via diffractive scattering of $190 \text{ GeV}/c \pi^-$ off a liquid-hydrogen target. This gives access to the excitation spectrum of all isovector mesons a_J and π_J in multiple final states. The spin-exotic meson $\pi_1(1600)$ is of particular interest.

COMPASS observed the $\pi_1(1600)$ in the $\pi^- \pi^- \pi^+$, $\eta \pi^-$, and $\eta' \pi^-$ final states. However, based on lattice QCD predictions the $\pi_1(1600)$ is expected to dominantly decay to $b_1(1235)\pi$. This decay mode is studied in the $\omega(782)\pi^- \pi^0$ final state, for which COMPASS acquired the largest dataset. We disentangle contributing meson resonances in a partial-wave analysis and find clear indications for a resonance-like signal in this final state consistent with the $\pi_1(1600)$. In this talk, we will discuss recent results of non-strange light-meson spectroscopy at COMPASS with focus on the $\omega(782)\pi^- \pi^0$ final state.

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