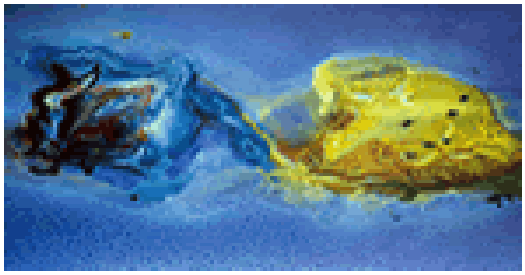

Contribution ID: **51** Type: **Invited talk**

Light-Quark Resonances at COMPASS

Friday, August 3, 2018 2:00 PM (30 minutes)

COMPASS is a multi-purpose fixed-target experiment at CERN aimed at studying the structure and spectrum of hadrons. The two-stage spectrometer has a good acceptance over a wide kinematic range and is thus able to measure a wide range of reactions. Light mesons are studied with a negative hadron beam (mostly π^-) with a momentum of 190 GeV/c.
The light-meson spectrum is investigated in various final states produced in diffractive dissociation.
The flagship channel is the $\pi^-\pi^+\pi^-$ final state, for which COMPASS has acquired the so far world's largest dataset of 46 M exclusive events.
We report on new results of a partial-wave analysis (PWA) of this final state, where we investigate a_J and π_J mesons with various spins J. In the PWA, the decay into $\pi^-\pi^+\pi^-$ is modeled as a chain of subsequent two-body decays in order to disentangle the contributions of different partial waves.
The large size of our dataset allows us to perform this analysis in narrow bins of the squared four-momentum transfer t'. Thus, we can also extract the t' dependence of the various partial-wave components from the data.
Finally, the resonance parameters of a_J and π_J mesons are measured by disentangling resonant and non-resonant components of 14 selected partial-wave amplitudes simultaneously in a resonance-model fit.
Describing 14 partial-wave amplitudes and all their interferences simultaneously in a single resonance-model fit allows us to study also weaker signals, e.g. from excited states, by making use of their interference pattern and their different couplings to the various decay modes.

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Track Classification: B: Light quarks