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Strange-Meson Spectroscopy at COMPASS

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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 large acceptance over a wide kinematic range. Thus, it can be used to investigate a wide range of reactions. Diffractive production of mesons is studied with a negative hadron beam with a momentum of 190 GeV/c.
So far, COMPASS has studied mainly isovector resonances of the a_J and π_J families with high precision, using the dominating π^- component of the beam.
Using the smaller K^- component of the beam allows us to investigate also the spectrum of strange mesons in various final states.
The flagship channel is the $K^-\pi^-\pi^+$ final state, which in principle gives access to study all kaon states, i.e. K_J and K_J^* mesons.
In order to disentangle the produced mesons by their spin-parity quantum numbers, we employ the method of partial-wave analysis.
COMPASS has acquired a large dataset of exclusive $K^-\pi^-\pi^+$ events, which is more than four times larger than any dataset collected by previous experiments at BNL, CERN, or SLAC.
The size of our dataset enables us to perform the analysis in bins of the squared four-momentum transfer t'.
Thus, the t' dependence of the various signals in the data can be studied.

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