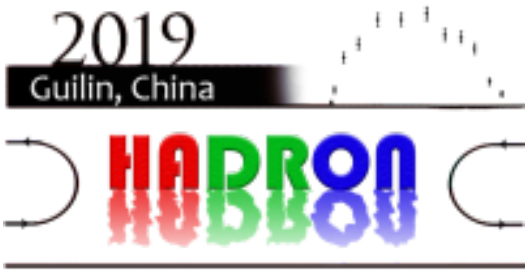

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Light-meson spectroscopy at leptoproduction and hadroproduction experiments

Sunday, 18 August 2019 09:05 (35 minutes)

The excitation spectrum of light mesons, which are composed of up, down, and strange quarks, is studied since decades. However, it still holds a number of puzzles and surprises that provide new insights into the nature of the strong interaction.

Recent high-quality data samples from several experiments allow us to not only study the properties of established mesons with unprecedented precision but to also search for new states. These searches in particular aim to resolve the question of the existence of so-called exotic states, such as four-quark states or states with excited gluon fields.

Since light mesons have often large widths and are overlapping, the mapping of their spectrum is challenging and requires large quantities of data on different production and decay modes. The data are analyzed using a framework of interfering quantum amplitudes known as partial-wave analysis (PWA). Most excited meson states decay into multi-particle final states, for which the PWA requires extensive modeling of the dynamics of the final-state hadrons.

In this talk, I will give an overview on ongoing experimental studies of light mesons and discuss possible interpretations. I will also touch on novel analysis techniques and the prospects for future progress.

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