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Search for light Exotics in Coupled Channel Partial Waves Analyses Using PAWIAN

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The light meson regime still is not too well understood and holds many open questions that can only be answered using sophisticated analysis strategies to describe the data.
In particular, searching and investigating exotic states e.g. glueballs, hybrids and tetraquarks is a real challenge among the many broad and overlapping resonances, but represent a key point towards a better understanding of QCD. Here, coupled channel partial wave analyses offer promising opportunities to disentangle the different states in the highly populated spectrum of light mesons. Combining data of different production mechanisms, as e.g. gluon-poor two-photon fusion events and gluon-rich reactions, makes the analyses and the achieved results much more reliable and better constrained.
To do so, challenges as interfering and overlapping resonances that decay into multiple channels and occur close to kinematical thresholds have to be dealt with in a proper way and sophisticated dynamical models - as e.g. K-matrix - need to be applied by properly taking fundamental constraints as unitarity and analyticity into account. Such models are, among others, implemented in the here used partial wave analysis package PAWIAN.
In the talk the methods applied together with new results of coupled channel analyses of different production mechanisms, as two-photon fusion, $\bar{p}p$ annihilation, and different scattering data samples, will be covered.

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