Meson Production in hadro- and photo-induced reactions

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The meson production and associated excited-baryon-analysis program by the Jülich-Athens/GA-Washington/DC Collaboration will be presented. The program's analysis is based on a dynamical coupled-channels approach developed by the Collaboration [1-4], where the basic symmetries, such as the two-body unitarity, analyticity, and gauge invariance are respected. In particular, gauge invariance is enforced as dictated by the generalized Ward-Takahashi identity. In the hadronic reactions sector, the πN, ηN, $K\Lambda$, and $K\Sigma$ channels are included, in addition to the effective $\pi\pi N$ channels σN, ρN, and $\pi\Delta$. Energies up to $\sqrt{s} = 2$ GeV are considered. In the photo-induced reactions sector, the neutral and charged pion photoproduction processes are considered up to $\sqrt{s} = 1.65$ GeV so far [4]. These are currently being extended to higher energies including the ηN, $K\Lambda$, and $K\Sigma$ channels.

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