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Pion-photon transition form factor with analytic coupling

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We investigate the pion–photon transition form factor within the framework of analytic QCD. A comparison is performed between experimental data and perturbative QCD based on conventional and analytic versions of perturbation theory with the "massive" form of the twist-four contribution. We show that conventional perturbation theory fails to reproduce the data, while the analytic version demonstrates good agreement with experiment.

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The results obtained in analytic QCD are very stable with increasing order of perturbation theory. Moreover, they are in perfect agreement with the results in [1, 2] (see Fig. 1), obtained in the framework of so-called method of lightcone sum rules in forms of dispersion relations [3, 4].

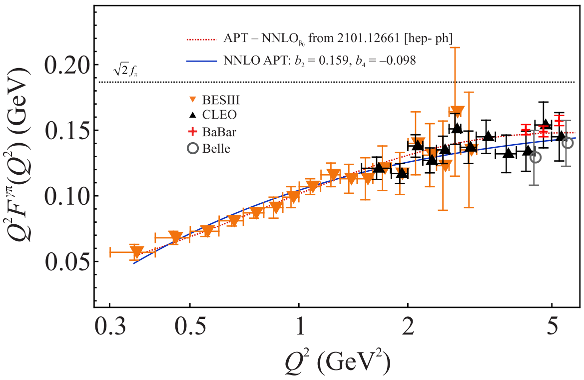

Fig. 1. (Color online) The results in the next-to-next-to-leading order of analytic QCD together with the results obtained in [1]

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