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Representation of the RG-invariant quantities in perturbative QCD through powers of the conformal anomaly

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We consider the possibility of representing the perturbative series for renormalization group invariant quantities in QCD in the form of their decomposition in powers of the conformal anomaly $\beta(\alpha_s)/\alpha_s$ in the \msbarscheme. We remind that such expansion is possible for the Adler function of the process of e^+e^- annihilation into hadrons and the Bjorken polarized sum rule for the deep-inelastic electron-nucleon scattering, which are both related by the Crewther-Broadhurst-Kataev relation. In addition, we study the cases of the static quarkantiquark Coulomb-like potential, its relation with the quantity defined by the cusp anomalous dimension and the Bjorken unpolarized sum rule of neutrino-nucleon scattering. The arguments in favor of the validity of the considered representation are given.

Primary author(s) :Prof. KATAEV, Andrey (INR, Moscow)Presenter(s) :Prof. KATAEV, Andrey (INR, Moscow)Session Classification :Afternoon session 23/11/2022

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