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Gluon nature of multiparticle production

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Multiparticle production still attracts our attention. Simulation by using Monte Carlo event generators is performed before planning any experiment. But it often overestimates (or underestimates) experimental data. Of all multiparticle processes, e^+e^- annihilation is the theoretically cleanest, proceeding via an intermediate virtual photon or Z^0-boson followed by $q\bar{q}$ pair creation. QCD describes well the development of $q\bar{q}$ cascade as marcovian branching process. The transformation of quarks and gluons into observable hadrons occurs at hadronization, to which perturbation theory is no longer applicable. The choice of a scheme for it is based on experimental data. Convolution of cascade and hadronization allowed us to describe the multiplicity. This model is called the gluon dominance model. Several decades have passed since a series of e+e− annihilation experiments were carried out. The hadron and heavy ion research revealed many new results. That is why it appeared necessary to analyze multiplicity n e+e−-annihilation again

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