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Multi-particle fields as a method for hadron's description

The development of multi-particle field method in the quarks scattering problem was considered. This method has been used to describe the differential cross section of elastic scattering by square of the transferred four-momentum. It is shown that the measurement of the interacting particles coordinates with simultaneity condition leads to impossible binding of probability amplitudes arguments, which are the coordinates of Fock column by Lorentz transformation or any other way. The state does not change in the transition from one inertial system to another in the case when the internal state of the particle can be considered as non-relativistic state, even if these systems are moving with relativistic velocities relative to one another [1]. With this result we consider dynamical equations for multi-particle fields, which describe creation and annihilation of hadrons after quantization and appreciate hadrons quark structure. Methods are similar for single-particle fields and it describes the hadrons processes and leads us to expressions of hadrons energy-momentum conservation law. If we consider single-particle field operators we will get expressions for constituent quarks and gluons. It is shown that multi-particle fields method allows to describe formation of quarks bound state, bound states interaction and scattering in one model. In addition multi-particle gauge fields consideration allows to find interaction potential between quarks, which describes quarks confinement. It is also shown that dynamic equations for two-particle gluon field describe the gluons confinement [2]. The results are obtained for differential cross section of protons elastic scattering by square of the transferred four-momentum calculation. Unfortunately we could not achieve quantitative agreement with experiment, but qualitative results reproduce the experiment.

References:

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