

A New Symmetry of Electroweak Lagrangian

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Problems of the Standard Model, associated with the introduction of non-gauge interactions and with the introduction of an electromagnetic field as a linear combination of fields on which various gauge groups are implemented, are analyzed. It is noticed that the existing model contains $U(1)$ –phase uncertainty of the matrix elements of the raising and lowering generators of the $SU(2)$ group. This uncertainty creates the condition for the additional local $U(1)$ –symmetry of the Standard Model Lagrangian with respect to the choice of various equivalent generator representations of the $SU(2)$ group. Such symmetry is provided by a gauge electromagnetic field introduction. In this case, due to the different action of the raising and lowering generators on the fields of each generation of leptons and quarks, these fields interact with the electromagnetic field in different ways.

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