A Hypothetical Mechanism of Generating Magnetically Charged Fermions by CP-symmetry Breaking

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Based on the assumption that electroweak bosons, leptons and quarks possess a substructure of elementary fermionic constituents, in a previous paper it was demonstrated that under CP-symmetry breaking “electric” and “magnetic” electroweak bosons coexist, where the latter transmit magnetic monopole interactions. In this paper the calculation is extended to the derivation of the effective theory for electroweak bosons and leptons. It is shown that under the influence of CP-symmetry breaking charged leptons are transmuted into dyons, the interactions of which are mediated by electric and magnetic electroweak bosons. The dynamical law of the fermionic constituents is assumed to be given by a relativistically invariant nonlinear spinor field theory with local interaction, canonical quantization, selfregularization and probability interpretation. The corresponding effective theory is derived by means of weak mapping theorems and turns out to be an extension of the Standard model for dyons where owing to CP-violation SU(2)-symmetry is simultaneously broken. A mechanism of inducing CP-symmetry violation in the low energy range is proposed.

Key words: CP-symmetry Breaking; Magnetic Monopoles; Dyons; Effective Electroweak Theory.