

A NEW FIELD THEORY OF FUNDAMENTAL PARTICLES

S. S. Sannikov-Proskurjakov

National Scientific Center
"Kharkiv Institute of Physics and Technology"
(1, Academichna Str., Kharkiv 61108, Ukraine)

Proceeding from the dynamical structure of the space-time discontinuum (relativistic bi-Hamiltonian system) described in [1], a mathematically consequent theory of elementary particles and their interactions is built. As was shown earlier [11], this theory is free from ultraviolet divergences. In this paper, we find the evident form of field variables $f(x)$ and $f(\dot{x})$ of the system and consider the quantum transitions $f \rightarrow \dot{f}$ in it. As a result, bilocal fields $\psi(X, Y)$ and non-point (smearing) particles related to them arise. The mass spectrum of "bare" hadrons and leptons is found. Switching on interactions between fundamental particles is connected with the degeneration group of the ground state f of the system. The problem of reconstruction of the space-time continuum is considered.