

THE PROBLEM OF INTERACTIONS
IN A DYNAMICAL THEORY
OF PARTICLES (GENERAL QUESTIONS). 1

S. S. Sannikov-Proskuryakov

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

S u m m a r y

Proceeding from the dynamics of a relativistic bi-Hamiltonian system based on the Heisenberg algebra $h_{16}^{(*)}$ (see [1, 4]), possible kinds of interactions between fundamental particles are derived. Three kinds of interactions: strong, electromagnetic, and gravitational ones are connected with the degeneration of the ground state f_z of the system and are described by the degeneration group $I = (SU(2) \otimes U(1))_i \times U_e(1) \times T_{3,1}$. The invariance group E (hidden symmetry) of the state is defined. The space-time structure of interacting particle states (bilocal fields) is investigated and equations for these bilocal fields are obtained.