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Implication of nonlinear-supersymmetric general relativity

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Considering (unstable) Riemann space-time whose tangent space possesses NLSUSY structure specified by fermionic coordinate ψαi (i=1⋯N) and the ordinary Minkowski coordinates xa we can find the unified vierbein waμ and perform the ordinary geometric argument of the general relativity principle on such Riemann space-time and obtain straightforwardly new Einstein-Hilbert(EH)-type action LNLSGR (waμ) with the global NLSUSY invariance and equipped with the cosmological term. Due to NLSUSY structure of space-time LNLSGR (waμ) would break down(Big collapse) to the ordinary EH action for graviton, NLSUSY action for Nambu-Goldstone(NG) fermion ψαi (superon) and their gravitational interaction called superon-graviton action LSGM. (eaμ ψαi). Simultaneously, as shown in the toy model, the universal attractive force graviton would dictate the evolution(vacuum) of superon-graviton model LSGM (eaμ, ψαi) and produce, as shown in the toy model, all possible gravitational composites of superons except graviton corresponding to the eigenstates of ordinary SO(N) super-Poincare'(sP) LSUSY algebra of the particle physics(supergravity). which may be the ignition of the Big Bang of the universe. NLSGR/NLSGM paradigm may give new insight to the NLSGR paradigm may bridge potentially cosmology and the low energy particle physics which provides new insights into unsolved problems of cosmology, SM and mysterious relations between them, e.g. the space-time dimension four, the origin of SUSY breaking, the dark energy and dark matter, the dark energy density⊠(neutrino mass)4⊠the tiny neutrino mass, the three-generations structure of quarks and leptons, the rapid expansion of space-time and the fate of black hole etc. NLSGR/SGM may describe new paradigm for unification of space-time, matter and cosmological term before Big Bang.

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