Einstein's Gravity as an Emergent Local Gauge Tetrad/Spin Connection Field JACK SARFATTI, Internet Science Education Corporation — Einstein's 1915 General Relativity with curvature but no torsion is a local gauge theory of the abelian 4-parameter translation subgroup of the non-compact Poincare group. The gauge potentials are the four "Dirac square root" tetrads not the Levi-Civita field that is bilinear in the 16 tetrad components and their first partial derivatives. Since the tetrads are Lorentz 4-vectors, the basic gravity field is spin 1 and is, therefore, renormalizable. The spin 2 metric field is composite. The analogy with electroweak-strong nonabelian compact Lie group gauge theories becomes apparent when the full Poincare group is locally gauged adding a dynamically independent torsion field to the curvature field. A unification of post-inflation emergent Einstein gravity with the strong force of quantum chromodynamics is also apparent in the tetrad formulation. The tetrad fields are analogous to the superfluid flow field that is the gradient of a ground state coherent multi-valued Goldstone phase.

Jack Sarfatti
Internet Science Education Corporation

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