

Abstract Submitted
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Deduction of Einstein equation from homogeneity of Riemann spacetime JUN NI, Department of Physics, Tsinghua University — The symmetry of spacetime translation leads to the energy-momentum conservation. However, the Lagrange depends on spacetime coordinates, which makes the symmetry of spacetime translation different with other symmetry invariant explicitly under symmetry transformation. We need an equation to guarantee the symmetry of spacetime translation. In this talk, I will show that the Einstein equation can be deduced purely from the general covariant principle and the homogeneity of spacetime in the frame of quantum field theory. The Einstein equation is shown to be the equation to guarantee the symmetry of spacetime translation. Gravity is an apparent force due to the curvature of spacetime resulted from the conservation of energy-momentum. In the action of quantum field, only electroweak-strong interactions appear with curved spacetime metric determined by the Einstein equation.. The general covariant principle and the homogeneity of spacetime are merged into one basic principle: Any Riemann spacetime metric guaranteeing the energy-momentum conservation are equivalent, which can be called as the conserved general covariant principle.

[1] Jun Ni, Chin. Phys. Lett. 28, 110401 (2011).

Jun Ni
Department of Physics, Tsinghua University

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