

Abstract

It is shown that the vacuum state in quantum gravity can be followed by a particle-fulfilled universe that represents the current status of the universe. In this model the modification in dispersion relation (Lorentz violation) is picked up representing the regime of quantum gravity. The result can be interpreted that the existence of the particles is due to quantum effects of gravity. It is concluded that only the vacuum state of quantum gravity theory is meaningful and all the matter fields will appear spontaneously after the process of semi-classical analysis.