

Abstract

We discuss about the measurement in cosmology from the relativistic and quantum mechanics points of view. The concept of uncertainty principle in the finite particle horizon size, excludes the momentum of the particles in the phase-space less than $\pi\hbar H/c$. This effect modifies the standard thermodynamics of early universe such as equation of state of ultra-relativistic particles and dependence of temperature, energy density and pressure to the scale factor. During the inflation the particle horizon inflate to a huge size and causes the uncertainty in the momentum to be negligible. We show that this modification to the early universe thermodynamics is important for energies ($E > 10^{17} GeV$).