



東北大学 宇宙創成物理学国際共同大学院プログラム

GPPU Seminar

# “A possible interpretation of Hubble tension by inhomogeneous cosmology”

by Toshifumi Futamase (Tohoku University)

Time and Date: 15:00-17:00, Nov 22<sup>nd</sup>, 2023

Place: Room 745, Science Complex B H03 (hybrid)

Registration: "<https://us02web.zoom.us/meeting/register/tZAqc-2h pz0iHtwvfa5Uggx5np8DflAjz3iw>”

I show that the Hubble parameter describes the expansion rate of our universe and is one of the most important parameter to characterize our universe. Thus the measurement of Hubble parameter has been a major topic in the observational cosmology. Recently there has been a significant discrepancy in the observed value in the Hubble parameter depending on the methods of the observation. This is called the Hubble tension. If the discrepancy is real, it will give rise to a revolutionary change in cosmology. I will show in this talk that the observed inhomogeneity of matter distribution in our neighboring universe naturally explain the tension without introducing any artificial assumption on physics. For this purpose the Einstein equations are averaged over a finite domain to construct local Friedmann universe, and obtain the relation between local and global(horizon scale) Hubble parameter. For students who are not familiar with cosmology, I will give a brief introduction on the necessary knowledge on astronomy and cosmology such as Hubble parameter and the distance -redshift relation.

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