宇宙創成物理学国際共同大学院プログラム 東北大学



**GPPU** Seminar

## 1) "Investigating Galaxy Mass Growth and "Death" One Billion Years after the Big Bang"

by Kosuke Takahashi (Tohoku University) Time and Date: 13:00-15:00, March 26, 2025 Place: Room 745, Science Complex B (H-03) (hybrid)

**Registration:** "https://us02web.zoom.us/meeting/register/quZaCEG5RcCk6fil1a91Tw"

Identifying when massive galaxies first emerged and how their star formation ended ("Galaxy Death") is crucial for understanding galaxy evolution. Observations show that such galaxies (stellar mass  $\sim 10^{11}$  Msun) already existed about 1.2 billion years after the Big Bang (z < 4.9). Our Ruby-Rush program targets even earlier epochs, around one billion years  $(z \sim 5)$ , to determine whether similarly massive "mature" galaxies—those no longer forming stars were in place. When star formation ceases, a galaxy's spectrum exhibits a strong "Balmer break," indicating that star-forming activity ended roughly 100 million years earlier. Using the Subaru Telescope and two specialized "medium-band" filters (K2 and K3), we discovered a mature galaxy candidate at  $z \sim 5$ , illustrating accelerated growth at that epoch. In this seminar, I will discuss our Ruby-Rush program and share JWST results that provide new insights into mature galaxies across a wide range of masses.

Contact : Kazuhiro Watanabe (kazuhiro.watanabe.b8 [at] tohoku.ac.jp)