



Contribution ID: 79 Contribution code: S4 High Energy and Particle Physics
Presentation

Type: Oral

Improving Constraint on Evolution of Galaxies with Large-scale Outflow at $z < 1.5$ with Subaru/Hyper Suprime-Cam Survey

Friday 24 June 2022 14:45 (15 minutes)

It is widely believed that star-forming spiral galaxies stop their star formation activity and eventually evolve into the passively evolved elliptical galaxy. One of the key factors is the gas outflowing process that depletes the star-forming ingredient in the galaxy. In 2017, we reported the systematic search for large-scale outflowing galaxies at $z = 0.1 - 1.5$ covering the past 9 billion years of the universe. However, due to the small comoving volume at low redshifts, we could not detect any candidates at $z < 0.40$. In this study, we redo the search with newly available imaging data from Subaru/Hyper Suprime-Cam legacy survey. We found 819 candidates with large-scale outflow at $z = 0.1 - 1.5$. The number of samples increases more than 10 times as compared with the previous study. With this new result, we can make a meaningful constraint on the evolution of galaxies with gas outflow on a scale large enough to go beyond their stellar component. We also found that extended emission indicating the gas outflow is rather concentrated in the galaxy cluster than in the individual galaxy. Further study with follow-up spectroscopic observations shows that the gas outflow found in most samples originates from the intense star formation in a density-bounded ionization state without any evidence of fast radiative shock.

Author: YUMA, Suraphong (Mahidol University)

Presenter: YUMA, Suraphong (Mahidol University)

Session Classification: S4 High Energy and Particle Physics

Track Classification: High Energy and Particle Physics