X53a   NIR spectroscopic study of low-mass HAEs at z∼2 in ZFOURGE-COSMOS field

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The star-forming main sequence (SFMS) is a correlation between stellar mass and star formation rate (SFR), with more massive galaxies generally exhibiting higher SFRs. Through the study of z $\sim$ 2 Hα emitters in ZFOURGE field, we have found a low-mass ($< 10^9\,M_\odot$) population above the main sequence by K_s broadband excess (Terao et al. 2022; Chen et al. 2024).

To confirm their redshifts and high star formation rate, as well as their physical properties, we have carried out MOS spectroscopy by SWIMS on Subaru Telescope. Observations, conducted in February 2022, targeted at seven Hα candidates at z $\sim$ 2. Among them, three are low-mass systems with $\log(M_*/M_\odot) < 9$, and four have stellar masses in the range $10 < \log(M_*/M_\odot) < 11$.

All the targets show emission lines at $z = 2.06$–2.49, where four galaxies exhibit multiple emission lines, two show a single strong line, and one has tentative dual-line detection. The emission lines are identified to be Hα, Hβ, [O III], [O II], and [N II]. The detections of strong Hα confirm ongoing star formation activity. We will report and discuss their properties in the presentation.