**INTRODUCTION**

Lyman-alpha (Lyα) emitting galaxies at high-redshifts serve as a good probe of neutral hydrogen in the intergalactic medium (IGM). Here we present measurements of Lyα fraction using a sample of Lyman-break galaxies (LBGs) between $4 < z < 6$ with deep HST grism observations from GRAPES/PEARS surveys as well as spectroscopic observations from MUSE integral-field spectrograph (Bacon et al. 2010). The $z = 5$ & 6 LBGs are spectroscopically confirmed with deep HST grism data from GRAPES and PEARs surveys.

**DATA**

The candidate LBGs at $z \sim 4$ is based on a sample of photometric redshifts between $3.5 < z < 4.5$. For $z = 5$ & 6, we use spectroscopically confirmed LBGs from Grism ACS Program for Extragalactic Science (GRAPES) and Probing Evolution and Reionization Spectroscopically (PEARS) surveys (Rhoads et al. 2009; Malhotra et al. 2005) which are based on robust color-color selection criteria. In total, we have 209 B-band ($z \sim 4$), 31 V-band ($z \sim 5$) and 23 i'-band ($z \sim 6$) dropouts with matching MUSE observations.

**METHOD**

In order to detect the presence of Lyα emission line in the above sample of LBGs, we visually inspect the 1D spectra created using MPDAF (MUSE Python Data Analysis Framework) for each object and characterize the detected emission line by measuring the line asymmetry parameters, $a_x$ and $a_f$ (Rhoads et al. 2003, 2004), line-widths (FWHM) and equivalent-widths (EW). With a high spectral resolution of $\sim 2.5\,\text{Å}$ in MUSE, we are able to observe the line asymmetry quite remarkably. We make sure that these detections have a significance $\geq 5$ and SNR $\geq 10$. We detect Lyα line in 68 B-, 11 V-, and 8 i'-band dropouts from our LBG sample.

**ANALYSIS**

Comparison of our Lyα fraction measurements with previous studies

We derive ‘Lyα fraction’ for $z = 4-6$ which is essentially the fraction of LBGs with Lyα line in our LBG sample with MUSE detections and compare it with previous studies. We find it quite consistent with previous measurements especially at $z \sim 5$.

**CONCLUSIONS**

For reionization studies, it is important that measurement of Lyα fractions between $4 < z < 6$ are robust and well understood so that it acts as a reference for probing reionization at higher redshifts, $z > 7$. Our preliminary results suggest that Lyα fraction is possibly higher than previous measurements at $z \sim 4$ but similar at higher redshifts.

**REFERENCES**


$^1$ MPDAF, the MUSE Python Data Analysis Framework, is an open-source (BSD licensed) Python package, developed and maintained by CRAL (http://mpdaf.readthedocs.io/en/latest/index.html)