X60a Unbiased study on LAE fraction at $z \sim 3$–6 with MUSE

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The redshift evolution of Lyα emitter (LAE) fraction among galaxies, X(LAE), has been used to probe the evolution of the HI gas fraction of the intergalactic medium at the end of reionization. It has been found to increase from $z = 3$ to 6, and to decrease at $z > 6$. However, uncertainties in the measurement of X(LAE) are still a matter of debate (e.g., Stark et al., 2011; Tilvi et al., 2014), and an unbiased sample and homogeneous Lyα measurements over a wide redshift range are required to assess X(LAE). As we discussed in the last ASJ meeting (X27a), we use a deep photometric catalog in Rafelski et al. (2015) and VLT/MUSE data (e.g., Bacon et al., 2017; Inami et al., 2017). We have found that our X(LAE) with Lyα equivalent width larger than 50 Å and UV magnitude larger than -19 mag at $z \sim 4$ tends to be lower than the previous results for the LBG sample in Stark et al. (2010). In this talk, we plan to discuss the cause of the difference. We use mock observations in a cosmological galaxy evolution model in Garel et al. (2015) to assess an effect of field-to-field variance and find that field-to-field variance does not affect our MUSE results. On the other hand, we confirm that strong Lyα emission at $z \sim 4$ enhances a flux in V-band (F606W) for B-dropout sample and that the bias in the LBG selection can raise X(LAE). These results are consistent with a trend suggested for X(LAE) at $z \sim 6$ in De Barros et al. (2017). We will also discuss the implications for reionization.