SPECTROSCOPIC IDENTIFICATION OF HIGH REDSHIFT LENSED GALAXIES

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We summarize an ongoing observational program, which combines HST imaging, VLT spectroscopy and exploits gravitational lensing of massive clusters, to identify faint lyman-α emitters ($3.2 < z < 6.3$).

The epoch of reionization marks a major phase transition of the Universe, during which the intergalactic space became transparent to UV photons. Determining when this occurred, the physical processes involved and the sources of ionizing radiation represents one of the major goals in observational cosmology. Irrespective of the nature of this radiation, the general consensus is that the faint sources dominate the ionizing background. Searching for low luminosities high redshift galaxies, thus complementing blank field studies, is a primary goal of surveys carried out through lensing clusters. The collaboration CLASH-VLT (Rosati et al., 2014), has recently produced high precision lensing models of CLASH clusters (Postman et al., 2012), thanks to the redshift measurement of many multiply lensed systems, which are critical for strong lensing mass reconstruction techniques. This effort takes advantage of multi-band (16 filters) imaging of 25 massive clusters from the CLASH program. CLASH-VLT has used the VIMOS wide-field spectrograph to obtain $\sim 30,000$ redshifts for 12 CLASH clusters at $z = 0.2 - 0.6$ in the south, with the spectroscopic identification of $500 - 1000$ members per cluster and the Integral-Field-Unit spectrograph MUSE to augment the spectroscopic coverage in the cluster cores. Fig. 1 (below) is an example of the identification of a lensed faint lyman-α emitter at $z \sim 6$ found in the core of a CLASH cluster, using MUSE data.

REFERENCES

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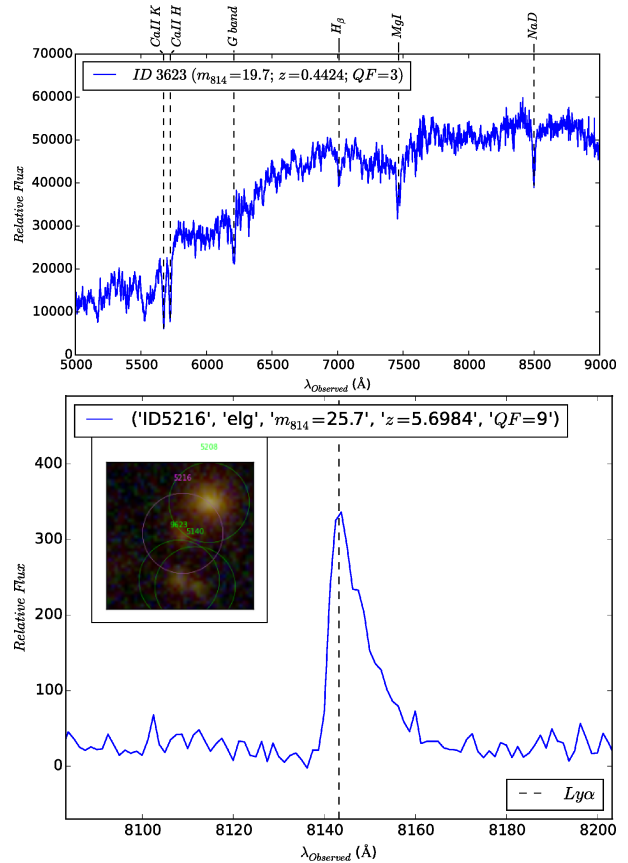[6]Osservatorio Astronomico di Bologna, Bologna, Italy

Fig. 1. MUSE spectrum of an Early-type galaxy (above) and Lyman-α emitter (below) found in the field of a CLASH cluster. The vertical black lines indicate the position of the emission line based on the best estimate of the systemic redshift . The flux is given in units of $10^{-20} \mathrm{erg\,s^{-1}cm^{-2}\mathring{A}^{-1}}$. The image cutouts in each panel ($2''$ across) show the HST counterparts. (Delgado-Correal et al., in preparation).