Highlights of Astronomy, Volume 14
IAU XXVI General Assembly, 14-25 August 2006
Karel A. van der Hucht, ed.

doi:10.1017/S1743921307010320

High-redshift lensed galaxies

Roser Pelló[1], Daniel Schaerer[2,1], Johan Richard[3], Jean-Franc Le Borgne[1], Jean-Paul Kneib[4], Angela Hempel[2], Eiichi Egami[5], Frédéric Boone[6], Françoise Combes[6], Jean-Gabriel Cuby[4], Andrea Ferrara[7] and Michael W. Wise[8]

[1]Laboratoire d'Astrophysique, OMP, 14 Avenue E. Belin, F-31400 Toulouse, France
email: roser@ast.obs-mip.fr

[2]Geneva Observatory, 51 Ch. des Maillettes, CH-1290 Sauverny, Switzerland

[3]Caltech Astronomy, MC105-24, Pasadena, CA 91125, USA

[4]OAMP, Laboratoire d'Astrophysique de Marseille, F-13012 Marseille, France

[5]Steward Observatory, U. of Arizona, 933 North Cherry Avenue, Tucson, AZ 85721, USA

[6]Observatoire de Paris, LERMA, 61 Av. de l'Observatoire, F-75014 Paris, France

[7]SISSA, International School for Advanced Studies, Via Beirut 4, I-34100 Trieste, Italy

[8]M.I.T., Center for Space Research, Cambridge, MA 02139-4307, USA

Abstract. We present the results obtained from our deep survey of lensing clusters aimed at constraining the abundance of star-forming galaxies at $z \sim 6-11$.

Keywords. galaxies:high-redshift, infrared: galaxies, early universe

A first attempt was made to address the properties of star-forming galaxies at $z \geqslant 6$ using lensing clusters. High-z candidates were selected among optical dropouts using near-IR photometry. The luminosity funtion (LF) derived at $z \simeq 6$ - 10 is consistent with the LF for LBGs at $z \simeq 3$–4, and also compatible in the low-luminosity regime with the $z \simeq 6$ sample in the UDF and GOODS fields (e.g., Bouwens & Illingworth 2006), but we don't see the turnover observed by other authors towards the bright end. Taken at face value, our results are consistent with a constant SFR density up to $z \simeq 10$. Spectroscopic follow-ups are underway to determine the efficiency of our selection. Additional multi-wavelength photometry is being collected (*HST*, *Spitzer*-IRAC) to improve the characterization of high-z candidates. Lensing clusters seem more efficient than present blank fields to explore the $z \simeq 6$ - 12 domain (within the same photometric depth and FOV). Positive magnification bias is expected from simulations, and seems to be confirmed by our results in lensing clusters. The follow up with the new generation of near-IR spectrographs is also optimized in lensing fields, because of their typical FOV and multiplexing capabilities (e.g., EMIR at GTC). Wide and deep optical+ near-IR surveys in blank fields are also needed to set robust constraints on the bright end of the LF.

More details are given in Pelló *et al.* (2005), Richard *et al.* (2006), Schaerer *et al.* (2006), and references therein.

References

Bouwens, R. J., & Illingworth, G. D. 2006, *New Astronomy Reviews*, 50, 152

Pelló, R., Schaerer, D., Richard, J., *et al.* 2005, in: Y. Mellier, & G. Meylan (eds.), *Gravitational Lensing Impact on Cosmology*, Proc. IAU Symp. No. 225 (Cambridge: CUP), p. 373

Richard, J., Pelló, R., Schaerer, D., *et al.* 2006, *A&A*, 456, 861

Schaerer, D., Pelló, R., Richard, J., *et al.* 2006, *ESO Messenger*, vol. 125, p. 20