

Using gravitational telescopes to probe the faint and distant Universe (Gabriel Bartosch Caminha)

Wednesday, 11 September 2019 09:25 (18 minutes)

Strong gravitational lensing by galaxy clusters can magnify the light of background sources by factors of tens or more, pushing the current observational limits towards the faint and distant Universe.

Thanks to coordinated programs using deep HST imaging (from large programmes such as CLASH, Hubble Frontier Fields and RELICS) and spectroscopy from MUSE in cluster fields, we can now probe intrinsically faint, high redshift (out to $z \sim 6.6$) sources in detail with potential impact on cosmic reionization.

It is worth noting that some of these clusters have been selected to be observed with JWST under different GTO and ERS programmes (IDs 1176, 1199, 1208, and 1324).

In this talk I will show the current deep MUSE data from our ESO/VLT programmes on a sample of clusters and the characterization in the rest-frame UV of intrinsically faint Lyman-alpha emitters (with Ly-alpha luminosities down to $\sim 10^{41}$ erg/s) and Lyman-break galaxies at high redshifts, that can be observed only thanks to the gravitational lensing effect.

Special attention will be given to the observations of the HFF cluster MACSJ0416, which has the deepest MUSE observations for a cluster lensing up to date, overcoming the depth of the most expensive observations on blank fields, such as the Hubble Ultra-Deep Field.

This will give us a glimpse and pave the way for the science that we will be able to explore with the extremely large telescopes and JWST in the near future.

Primary author: Dr CAMINHA, Gabriel Bartosch (Groningen)

Track Classification: Reionization and First Light