Adélaïde Claeyssens Oral presentation

Session S17: Gravitational Lensing in the JWST era: Galaxies and Galaxy Clusters

<u>Titre</u>: Detecting and characterising high-redshift low-luminosity Lyman-alpha emitters with MUSE, HST and JWST.

Abstract:

Detect and characterise high-redshift galaxies (z>3) is very challenging due to their apparent luminosity and their size on the sky. By using galaxy clusters as strong gravitational telescopes, it is possible to observe very distant galaxies with high magnification factors and then probe very faint galaxy populations in the distant Universe. At z>3, these galaxies are mainly detected through their Lyman-alpha emission. Exploiting the large quantity of VLT/MUSE and HST data on galaxy clusters, we built the largest sample of lensed Lyman-alpha emitters (LAEs), the Lensed Lyman-Alpha MUSE Arcs Survey (LLAMAS) containing around 1000 Lymanalpha images from 600 galaxies. Thanks to the magnification achieved in these 21 clusters, which improve both the spatial resolution and spectral S/N reached for individual galaxies, we are able to characterise the LAEs population, the circumgalactic medium morphology and its link with the UV component properties, as well as the Lyman-alpha and nebular emission in a large population of galaxies from z=3 to z=6.6 down to log(L_Lya)=39.5 erg/s. The LLAMAS sample represent a valuable collection of source for follow-up observations with JWST including achieved and future programs with JWST/NIRCam and/or NIRSpec on Abell2744 (UNCOVER & GLASS), AbellS1063 (GLIMPSE), Abell1689. The unprecedented resolution and sensitivity of the JWST combined with the lensing magnification allow us to detect new emission lines at high-redshift (such as Halpha to better interpret the Lyman-alpha emission), probe the physical conditions within the ISM of distant galaxies and detect HST-undetected faint UV conter-parts of the LAEs which could explain multiple results from the LLAMAS studies (such as the spatial offsets measured between the HST counter-part and the Lymanalpha emission).