Poster

Title: High redshift star formation processes at an unreached spatial resolution thanks to JWST observations of lensed galaxies

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Abstract:
Currently, resolving structures at sub-kpc scales at high redshift (z>1) is hardly achievable by actual telescopes even with space-based observations. The combination of deep, high-resolution imaging and spectroscopic observations performed on strongly gravitationally lensed targets enhances to reveal sub-kpc structures and their physical properties at cosmological distances. The physical properties of these high redshift clumps remain relatively unexplored and their role in the formation an evolution of the galaxies is not clear. Hundreds of compact UV-bright sources at high redshift have been detected in Hubble galaxy clusters fields (17 clusters presented in Richard et al. 2021 and Claeyssens et al. 2022) with 10-500 pc sizes and UV magnitude reaching M=-13, similar to local massive star clusters and star-forming regions. The detection of UV-bright clumps from z=8 to z=1 indicates that these star-forming clumps could be a major mode of star formation in galaxies.
However, with current telescopes, we are still missing the complete picture that could link star formation at tens of pc scales to processes at galactic scales (such as stellar feedbacks). We will take advantage of JWST sensitivity and unprecedented spatial resolution combined with the natural gravitational lens telescope to reach hundred/sub-hundred pc resolutions in hundreds of high redshift (z>1) galaxies necessary to resolve individual star-forming clumps.
These new observations will represent an essential step to understand the mechanisms that drive galaxy formation and evolution in the early Universe.
I will present the measurement of these properties performed on our sample of available deep HST data and the expected results we will obtain thanks to the upcoming JWST data.