
A zoomed view of galaxies at high redshift.

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Abstract

The discovery and characterization of primeval galaxies represent some of the biggest challenges of current observational and theoretical cosmology. This kind of studies recently entered a golden era, thanks to the unprecedented capabilities of ALMA. Far infrared fine structure lines – [CII]158 μ m in particular – are exquisite tools to search for and characterize the most remote system in the Universe. These experiments can be combined with detailed galaxy simulations to achieve a solid theoretical understanding.

I will present cosmological zoom-in, high-resolution (30 pc) simulations of high-redshift ($z \sim 6$) galaxies with the aim of characterizing their interstellar medium and chemical structure. Comparing line and continuum emission from our simulations with the most recent observations of LAEs and LBGs allow us to draw novel and unique conclusions. In addition, such comparison is fundamental to constrain feedback prescriptions and radiation transfer methods in simulations, which are a far cry from being fully understood.

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