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Early star-forming galaxies through Gravitational telescopes

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The standard hierarchical model of galaxy formation predicts that small objects form first before growing and merging into more massive objects. In this context, the shape of the luminosity and mass distribution of galaxies provides a direct constraint on galaxy formation models. The interplay between gas accretion and feedback is likely reflected in the shape of the luminosity function (LF) few hundred million years after the Big Bang. It is therefore possible to constrain the growth rate of early star-forming galaxies by looking at the evolution of the luminosity functions as a function of redshift.

The developed completeness simulations allow us to directly estimate survey completeness in stellar mass through strong lensing clusters to select such high-redshift galaxies.

Together with the BUFFALO program that combines Hubble Space Telescope observations and strong gravitational lensing of massive galaxy clusters to study high-redshift galaxies, it is possible to observe distant galaxies. In this work, we have detected a sample of $z \sim 6 - 9$ galaxy candidates from six massive lensing clusters.It includes 199 galaxy candidates identified in the Lyman break selection.

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