Uncovering Early Galaxy Evolution in the ALMA and JWST Era
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Resolving on 100 pc-scales the UV-continuum in Lyman-emitters between redshift 2 to 3 with gravitational lensing

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Abstract. Lyman-alpha emitting (LAE) galaxies are thought to be predominantly responsible for the re-ionisation of the Universe and are, as such, one of the most studied star-forming galaxy populations. Current optical and narrow-band studies are limited by the angular resolution of the observations and the considerable investment in telescope time. Strong gravitational lensing is an extremely powerful method that can be used to overcome these limitations. In my talk I will present a study on the first homogeneous sample of 17 lensed Lyman-alpha emitters at redshift $2 < z < 3$. By taking advantage of the lensing magnification, I was able to access the detailed structure of this high redshift star-forming galaxies, finding that they have radii ranging from 0.2 to 1.8 kpc and have a complex and clumpy morphology, with a median ellipticity of 0.49. This is consistent with disk-like structures of star-formation, which would rule out models where the Lyman-alpha emission is only seen perpendicular to the disk, and favours those clumpy models for the escape lines of sight for Lyman-alpha photons. We also find that the star formation rates range from 0.3 to 8.5 $M_{\odot}$/yr and that these galaxies tend to be very compact. The lower limit to their intrinsic size is about a factor of two smaller than that found for non-lensed LAEs, which highlights the power of gravitational lensing and sophisticated lens modelling techniques for resolving such objects in the high redshift Universe.