# An ALMA view of the interstellar medium of the z = 4.77 lensed starburst SPT2132-58

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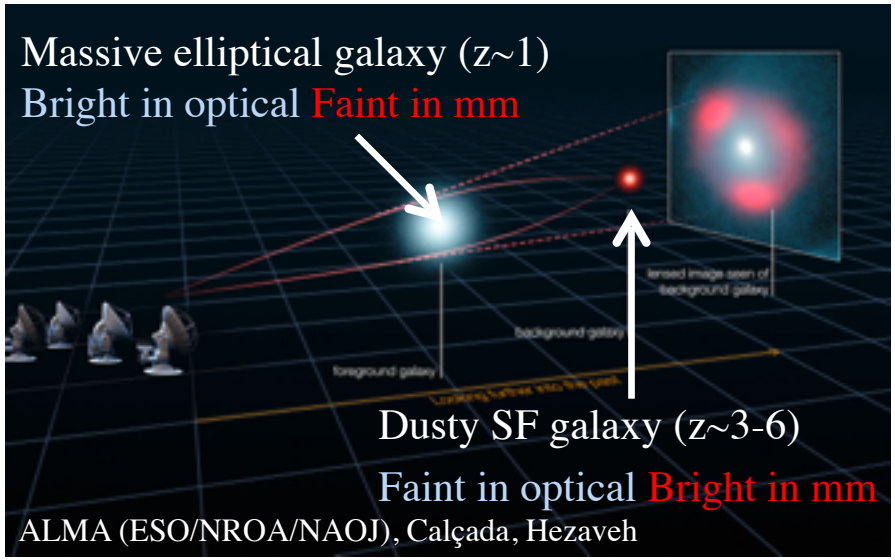
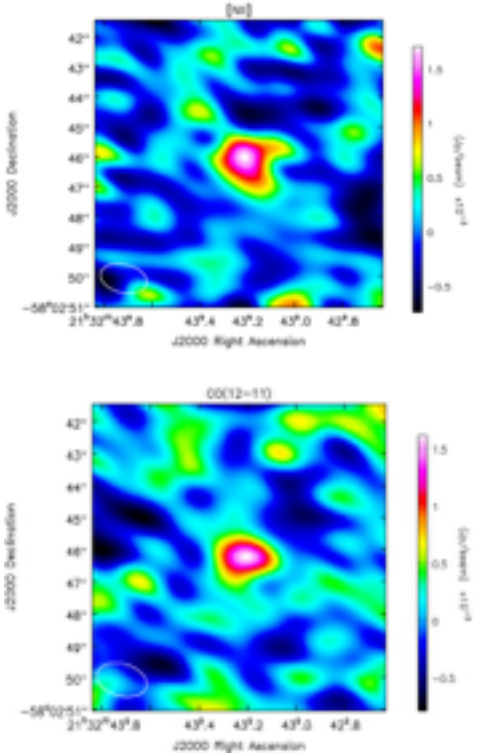


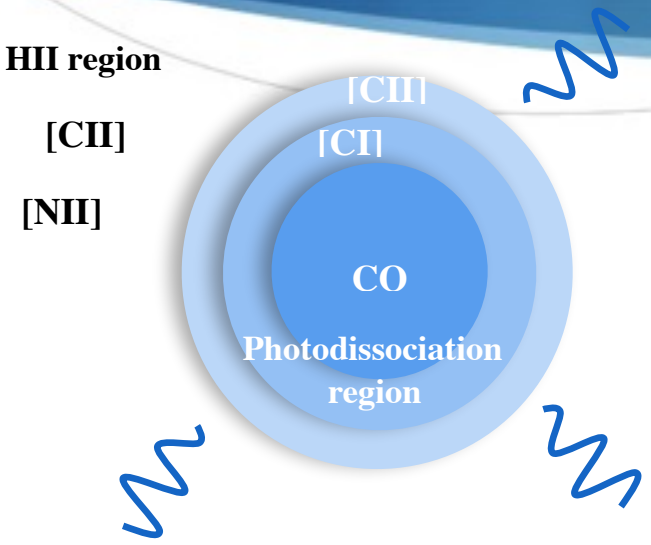

Normal telescope (ALMA)

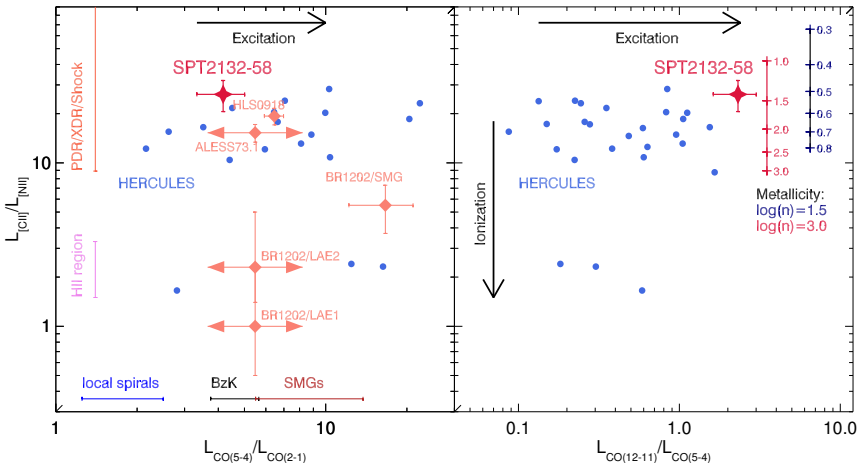
Natural telescope (gravitational lensing)




- Sample of lensed z~4 dusty star-forming galaxies from SPT
- Magnification μ~5-30 => line detections 25-900 times faster than unlensed
- A new detection of [NII] and CO(12-11) in **only 9 min on source** with ALMA

# ALMA unveils SPT 2132-58: an extreme starbursts with an evolved ISM at z=4.77




- Various lines trace various components of the ISM
- Gas content ~4 x $10^{10}$ Msun
  ([CI], CO, dust continuum)
  => $\alpha_{CO}$ ~ 1 Msun (K km/s $pc^2$)$^{-1}$
  (compatible with usual 0.8)
  => very short gas depletion timescale: 34 Myr
  (local spiral: 1Gyr)
- High [CII]/[NII] ratio
  => PDR dominated
  => metal enriched (0.5<Z<1.5)
- Bright CO(12-11) line
  => presence of highly-excited regions (AGN?)