

X41a RIOJA: NIRC*am* and NIR*spec* observations of SXDF-NB1006-2 at  $z = 7.2$ 

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In the past decade, ALMA observations have detected and investigated dozens of galaxies at  $z \gtrsim 6$  with FIR emission lines. After entering the era of JWST, NIR photometric and spectroscopic follow-up observations of ALMA-detected distant galaxies are key to understanding their stellar, ISM and morphological properties in a more detailed and comprehensive way. As one of the targets in RIOJA (Reionization and the ISM/Stellar Origins with JWST and ALMA) project, SXDF-NB1006-2 is the first galaxy at  $z > 6$  to be detected with the [O III] 88  $\mu\text{m}$  emission. In this study, we observed this galaxy with JWST NIRC*am* and NIR*Spec*/IFU. We performed SED fitting with NIRC*am* photometries and found consistent results with past analysis that this galaxy is a young starburst with a star formation rate of  $\sim 300 M_{\odot}/\text{yr}$  and a stellar age of several Myr. We compared morphology of FIR and optical [O III] emission revealed by 3D spectroscopy of ALMA and NIR*Spec*/IFU and found that the peak position of optical [O III] is spatially aligned with the southern clump of FIR [O III] emission, whereas the northern clump of FIR [O III] is aligned with diffuse northern optical [O III] emission. We will also discuss the electron temperature with flux ratio of optical and FIR [O III] emission lines.