

X52a VENU: the discovery of a strongly lensed clumpy galaxy at  $z \sim 11 - 12$ 

Minami Nakane (U. Tokyo), Vasily Kokorev (UT Austin), Seiji Fujimoto (U. Toronto), Masami Ouchi (NAOJ/U. Tokyo), Derek J. McLeod (U. Edinburgh), Miriam Golubchik (Ben-Gurion Univ.), Masamune Oguri (Chiba Univ.), Adi Zitrin (Ben-Gurion Univ.), Cecilia Bondestam (U. Edinburgh), Callum T. Donnan (NOIRLab), and the VENU team

Gravitational lensing enables us to observe intrinsically faint objects by enhancing both signal-to-noise ratios of faint fluxes and spatial resolutions. Although some recent studies using gravitational lensing have reported the clumpy star formation of intrinsically low-mass ( $M_* \lesssim 10^8 M_\odot$ ) galaxies at high redshifts, detections of such galaxies still remain rare, especially at  $z \gtrsim 10$ , motivating the search for the highly magnified galaxies.

In this talk, we present the discovery of a strongly lensed galaxy at  $z \sim 11 - 12$ , dubbed the “Misty Moons”, identified in the JWST/NIRCam images from the lensing cluster survey of the Vast Exploration for Nascent, Unexplored Sources (VENU; Cycle4 #6882). The Misty Moons is quintuply lensed by the galaxy cluster MACS J0257.1-2325 at  $z = 0.505$  according to the two independent lensing models. Two of the five images, ID1 and ID2 ( $\mu \sim 20 - 30$ ), are very bright (F200W  $\sim 26$  AB mag) and exhibit blue SEDs with prominent Ly $\alpha$  breaks. In the source plane, the Misty Moons is a sub- $L^*$  galaxy ( $M_{UV} \sim -18.0$  mag) resolved into multiple stellar clumps, each of which has effective radius of  $r_{\text{eff}} \sim 10\text{--}70$  pc and stellar mass of  $\sim 10^7 M_\odot$ . These clumps dominate the stellar mass budget of the Misty Moons ( $\gtrsim 80\%$ ), similar to other high- $z$  clumps, which suggests a highly clustered mode of star formation in the early Universe, unlike seen in local dwarf galaxies.