

## X23b “Big Three Dragons”: a $z = 7.15$ Lyman Break Galaxy Detected in [OIII] $88 \mu\text{m}$ , [CII] $158 \mu\text{m}$ , and Dust Continuum with ALMA

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Using ALMA, we have detected [OIII]  $88 \mu\text{m}$ , [CII]  $158 \mu\text{m}$ , and dust continuum in a  $z = 7.15$  LBG, B14-65666 (X05a: 2018a, Hashimoto et al.). In this presentation, based on a combined sample of B14-65666 and other 9 spectroscopically confirmed galaxies at  $z \approx 6.5 - 9.1$ , we discuss dust properties of star forming galaxies in the reionization epoch. Our sample includes four LBGs with dust continuum detections. With this sample, we examine the relation between the IR-to-UV luminosity ratio, IRX, and the UV continuum slope,  $\beta$ , which is useful to constrain the dust attenuation curve of galaxies. Previous studies have derived IRX and  $\beta$  values with different methods and/or assumptions. To overcome this issue, we have uniformly estimated IRX values of the sample assuming dust temperatures of 40 K and 50 K with the dust emissivity index of 1.5. We have derived  $\beta$  values from two photometry values that probe rest-frame wavelengths of  $\approx 1500 - 2000 \text{ \AA}$ . Our results show that there is no strong evidence for a steep (i.e., SMC-like) attenuation curve at  $z > 6.5$  at least for the four LBGs detected in dust.