Contribution ID: **102** Type: **Poster**

Dust Attenuation of Star-Forming Galaxies in the first 2 Gyr of the Universe

Tuesday 12 June 2018 14:13 (1 minute)

The development of extremely sensitive mm/submm telescopes (e.g. ALMA, NOEMA) opened a new window to the far infrared (FIR) continuum emitted by dust, which enables us to investigate the obscured star-formation history of the Universe. Using these new facilities, recent studies of the dust properties of early galaxies revealed unexpected results, as high redshift galaxies show much lower FIR emission than expected. However, these early results were based on small samples selected from small fields in the sky. Here, we take the next steps based on the ALMA archive in the COSMOS field (a.k.a A3COSMOS project) and present new results on the dust attenuation of a large sample of high-redshift galaxies at z~3-5. In particular, we study the relationship between the stellar mass (M_*), the UV spectral slope (β_{UV}), and the infrared excess (IRX). In total, our study is based on a sample of ~1000 galaxies (~10% of which are individually detected) at z=3-5 in a stellar mass range 10^9 - 10^{11} $M_\odot$ observed by ALMA during cycle1 - cycle4. Stacks show that the dust extinction corrections of local starburst galaxies are, on average, applicable to main-sequence z~3-5 galaxies. However, the IRX-beta_UV relation exhibits a very large scatter, up to $\pm$1 dex at a given UV slope. Similar results hold for the IRX-M_* relation. We discuss several physical explanations for the large scatter in the IRX-beta_UV relation and the IRX-Mass relation, and their implications for estimating the total cosmic star-formation rate density at $z > 3$.

Consider for a poster?

Yes

Primary authors: Mr FUDAMOTO, Yoshinobu (Observatory of Geneva); Prof. OESCH, Pascal (Observatory of Geneva)

Presenter: Mr FUDAMOTO, Yoshinobu (Observatory of Geneva)

Session Classification: Poster Presentations

Track Classification: The creation and evolution of dust