The UV slope and stellar metallicity of star-forming galaxies at z _˜ 3

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Abstract

The understanding of galaxy evolution at high redshift is still limited by systematic differences in our measurements and by the degeneracies among several physical properties, including dust attenuation, age and metallicity. Exploiting uniquely deep spectra from the VANDELS survey of _˜ 700 typical star forming galaxies at redshifts 2 - 5, I will present robust estimates of their stellar metallicity from UV rest frame absorption features that are unaffected by age, dust, IMF, star formation histories or interstellar absorption. Using these measurements along with multi-wavelength photometry, I will then explore the effect of metallicity on the UV-slope, which is usually taken as a proxy for dust attenuation, and constrain the reliability of UV based extinction and SFR estimates for the galaxy population in general. The UV slope - metallicity relation will enable the search for pristine, Pop III stars dominated systems in the early Universe with next generation telescopes, and trace the chemical and dust enrichment since the reionization epoch.

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