

# Towards a solid determination of the chemical properties of high- $z$ star-forming galaxies using UV lines.

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## Abstract

Star-forming galaxies are tracers of the properties of the young Universe given their very high luminosity and abundance in the very dense environments of the first stages of galaxy evolution. There is nowadays a great amount of available optical spectroscopical data coming from deep surveys in different cosmological fields along with a prevision of a even much larger supply of these data thanks to the upcoming very large telescopes. This demands the adoption of new methodologies for a precise chemical analysis of the ultraviolet emission lines redshifted to the detected optical part of the spectrum. In this contribution we describe a solid method based on the direct comparison between a large grid of photoionization models covering a large range of chemical input conditions with the absolute flux of the most prominent emission lines of the UV including Ly $\alpha$  1216 Å, [CIV 1549 Å, [OIII 1665 Å, and [CIII 1909 Å. This method is totally consistent for the determination of O/H and C/O abundance ratios with the direct method in those objects of the local Universe where this can be applied. We show the application of this method for a sample of 10 star-forming galaxies in the range  $2.4 < z < 3.5$  observed by the VUDS (VIMOS UltraDeep Survey). The extremely metal-poor condition and subsolar C/O ratios of this sample along with other properties coming from integrated photometry data taken from the *HST* make us conclude that these galaxies present properties quite similar to the first generation of galaxies formed during the reionization. (See poster).

## References

- [1] Amorín, R., Fontana, A., Pérez-Montero, E., et al. 2017, *Nature Astronomy*, 1, 0052
- [2] Pérez-Montero, E., & Amorín, R. 2017, *MNRAS*, 467, 1287