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UV ISM diagnostics in local high- z analogues with CLASSY

Rest-frame UV spectra are fundamental to our understanding of star-forming galaxies, since they provide a unique window on massive stellar populations, chemical evolution, feedback processes, and reionization. The COS Legacy Archive Spectroscopic SurveY (CLASSY) HST/COS treasury program provides the first high-resolution spectral catalogue of 45 local high- z analogues in the Far-UV (FUV, 1000 – 2000 Å) to investigate their stellar and gas properties, in order to improve the diagnostic power of UV lines. Indeed, a proper tool-set to interpret these diagnostics is still missing. In this talk, I will present CLASSY, mainly focusing on the ongoing analysis about the ionized interstellar medium (ISM) properties. Specifically, we analyzed the main FUV emission lines observable in our spectra (i.e., NIV1483,7, CIV1548,51, HeII1640, OIII]1661,6, SiIII]1883,92 and CIII]1907,9), to investigate the ISM properties in terms of density, ionization parameter and metallicity, in comparison with the information given by optical diagnostics, provided mainly by SDSS spectra. Our aim is to calibrate the UV diagnostics at low- z , exploiting both the optical and UV coverage for our sample, specifically for the future high- z studies where we will miss the optical counterpart. Overall, CLASSY will provide us with an extremely powerful toolkit, pivotal for understanding the spatially resolved properties of high- z systems observable with MAVIS in the rest-frame UV.

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