Marseille Abstract

In this talk, I will present UV continuum properties from the EPOCHS sample of 1011 high-redshift galaxies spanning 6.5<z<13 across 179 sq arcmin of public and PEARLS GTO NIRCam imaging from JWST Cycle 1. I will show the bias corrected beta-MUV relation, from which I find that the MUV=-19 galaxy population becomes extremely blue at z>11. The EPOCHS sample indeed contains a subsample of 68 robust ultra-blue galaxies with beta<-2.8 with high Lyman continuum escape fractions which may be important contributors to the reionization of the Universe at early times. From the EPOCHS beta-stellar mass scaling relation, I find a large population of faint, low mass, red galaxies at 6.5<z<11 and a non-detection of these sources at z>11. The steep slope of beta-stellar mass at z>11 implies that at early times type II SNe are the major dust producers and that low mass <10^8 solar galaxies with smaller gravitational potential wells lose this dust in outflows induced by SNe feedback. Carbon-rich Wolf-Rayet (WR) binaries may well be the culprits of the dust produced in low mass galaxies at z=9 since dust production in the winds of AGB stars takes longer than the rapid build up implied by the observed red beta slopes. To conclude I will talk about how the improved sensitivity of ELT/MICADO compared to JWST/NIRCam will improve stellar mass measurements at z>6.5 as a result of the mitigation of outshining via resolved SED fitting. This will inevitably lead to a greater understanding of the sources of dust production in the early Universe.