Star Formation Rates and Stellar Masses of H-alpha Selected Star-Forming Galaxies at z=0.84: A Quantification of the Downsizing

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In this work we analyze the physical properties of a sample of 153 star forming galaxies at z~0.84, selected by their H-alpha flux with a NB filter. B-band luminosities of the objects are higher than those of local star forming galaxies. Most of the galaxies are located in the blue cloud, though some objects are detected in the green valley and in the red sequence. After the extinction correction is applied virtually all these red galaxies move to the blue sequence, unveiling their dusty nature. A check on the extinction law reveals that the typical extinction law for local starbursts is well suited for our sample but with E(B-V)_stars=0.55 E(B-V)_gas. We compare star formation rates (SFR) measured with different tracers (H-alpha, UV and IR) finding that they agree within a factor of three after extinction correction. We find a correlation between the ratios SFR_FUV/SFR_H-alpha, SFR_IR/SFR_H-alpha and the EW(H-alpha) (i.e. weighted age) which accounts for part of the scatter. We obtain stellar mass estimations fitting templates to multi-wavelength photometry. The typical stellar mass of a galaxy within our sample is ~10^10 Msun. The SFR is correlated with stellar mass and the specific star formation rate (sSFR) decreases with it, indicating that massive galaxies are less affected by star formation processes than less massive ones. This result is consistent with the downsizing scenario. To quantify this downsizing we estimated the quenching mass M_Q for our sample at z~0.84, finding that it declines from M_Q ~10^12 Msun to M_Q ~8x10^10 Msun at the local Universe.

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