



Probing cluster formation under extreme conditions: massive star clusters in blue compact galaxies

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The numerous and massive young star clusters in blue compact galaxies (BCGs) are used to investigate the properties of their hosts. We test whether BCGs follow claimed relations between cluster populations and their hosts, such as the the fraction of the total luminosity contributed by the clusters as function of the mean star formation rate density; the ν band luminosity of the brightest youngest cluster as related to the mean host star formation rate; and the cluster formation efficiency (i.e., the fraction of star formation happening in star clusters) versus the density of the SFR. We find that BCGs follow the trends, supporting a scenario where cluster formation and environmental properties of the host are correlated. They occupy, in all the diagrams, the regions of higher SFRs, as expected by the extreme nature of the starbursts operating in these systems. We find that the star clusters contribute almost to the 20 % of the UV luminosity of the hosts. We suggest that the BCG starburst environment has most likely favoured the compression and collapse of the giant molecular clouds, enhancing the local star formation efficiency, so that massive clusters have been formed. The estimated cluster formation efficiency supports this scenario. BCGs have a cluster formation efficiency comparable to luminous IR galaxies and spiral starburst nuclei (the averaged value is about 35 %) which is much higher than the 8 - 10 % reported for quiescent spirals and dwarf star-forming galaxies.

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