

STAR CLUSTER COMPLEXES IN NGC 1427A

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We report the characterisation of star cluster complexes in the dIrr galaxy NGC 1427A, presently infalling towards the core of the Fornax galaxy cluster, likely for the first time. Using the spatial resolution of HST/ACS and auxiliary VLT/FORS ground-based observations, we study the properties of the most recent episodes of star formation in this gas-rich galaxy, the only one of its type near the core of the Fornax cluster.

Gas-rich galaxies in dense environments such as galaxy clusters and massive groups are deeply affected by a number of possible types of interactions with the cluster environment, which make their evolution radically different than that of field galaxies. This is the case of NGC 1427A where we study the structural and photometric properties 12 bright young star cluster complexes with exceptionally blue colors (see Fig.1). The comparison of our broadband near-UV/optical photometry with GALEV (Kotulla et al. 2009) simple stellar population models yields ages below $\sim 4 \times 10^6$ years and stellar masses from a few thousand up to $\sim 3 \times 10^4 M_{\odot}$, slightly dependent on the assumption of cluster metallicity. Their grouping is consistent with hierarchical and fractal star cluster formation. Object sizes (FWHMs), measured using the ISHAPE (Larsen 1999) task, correspond to relatively extended structures similar to star-cluster complexes already seen in other galaxies, with sizes from few parsecs up to tens of parsecs for the larger ones. Fig 1 shows the colors and sizes of our 12 star cluster complexes. Colors are consistent with the youngest population in agreement with the youngest ages provided by the SSP models.

All these evidence hints at the very recent star formation episode in this galaxy.

REFERENCES

- Kotulla, R., Fritze, U., Weilbacher, P., & Anders, P. 2009, MNRAS, 396, 462
 Larsen, S. S. 1999, A&AS, 139, 393

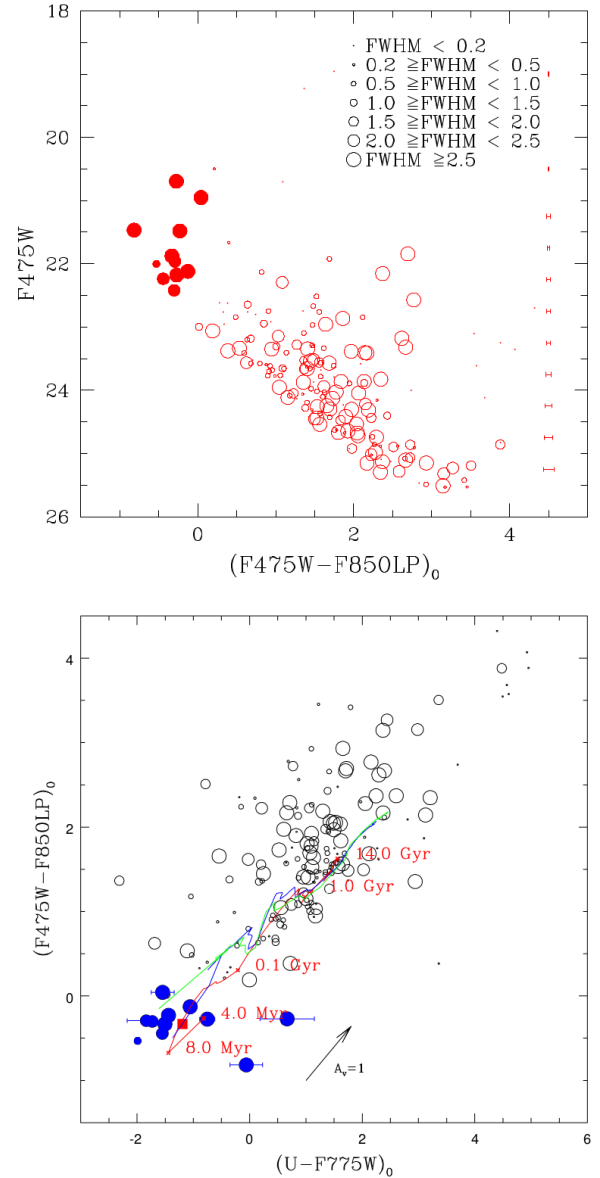


Fig. 1. Filled red and blue circles correspond to star cluster complexes. Top panel: Color-magnitude diagram of extended sources in NGC1427A. At the distance of NGC1427A 1 pix corresponds to ~ 4 pc. Bottom: Color-color diagram. Tracks correspond to GALEV SSP models for sub solar, solar and super solar metallicity. The filled square corresponds to the averaged color-color complex, which is consistent with the solar metallicity track.

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