

STRONG TRANSFORMATION OF SPIRALS AND GALAXY EVOLUTION IN CLUSTERS WITH THE GTC

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We propose an spectroscopic strategy devoted to reconstruct the star formation history of peculiar galaxies infalling to massive clusters which show the rupture of the spiral arms and long trails of blue star-forming knots. Deep spectra of the knots along the tail will be used to constraint their star formation history and kinematics.

We chose 235144-260358, a face-on spiral projected some 0.7 Mpc from the centre of Abell 2667 ($z = 0.23$), as the pilot target. This galaxy shows a striking morphology with more than a dozen of bright extragalactic knots extended from the galaxy disk up to a projected distance of 70 kpc (Figure 1). In a previous work (Cortese et al. 2007) we reported multifrequency data of this object.

Recently, other authors (e.g. Owen et al. 2006; Yagi et al. 2010; Bravo-Alfaro et al., in preparation) have found other galaxies with disrupted features in the Abell clusters 2125, 1686 and 0085 respectively. These galaxies present similar trails of star forming knots, but they are probably in different stages than 235144-0260358. The physical mechanisms responsible for such extraordinary disruption processes remain to be determined.

With this aim in mind we plan to use the GTC and OSIRIS (see Figure 2) to observe several knots around this galaxy in order to study the kinematical properties of the knots and constrain the long term history of star formation along the trail. Looking for possible gradients in age as a function of distance from the parent galaxy will help to discriminate between two possible scenarios: (a) if a strong gradient of age is seen along the tail it will support an extraordinary event of gas stripping by ram pressure and the later development of knots of extragalactic SF-regions; (b) if the star population and SF history are quite the same along the trail, this will indicate that all the stellar material is coming from 235144-

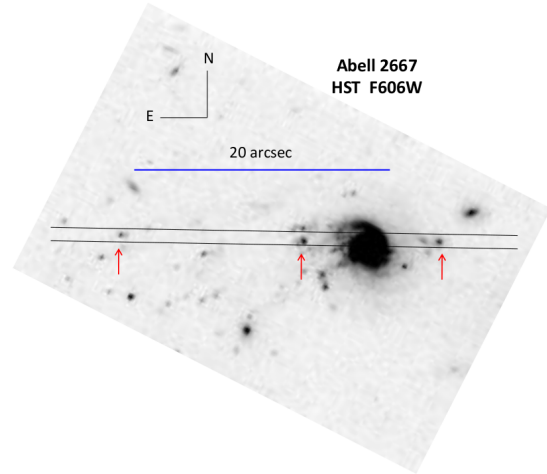


Fig. 1. RGB image of 235144-0260358 (HST-WFPC2).

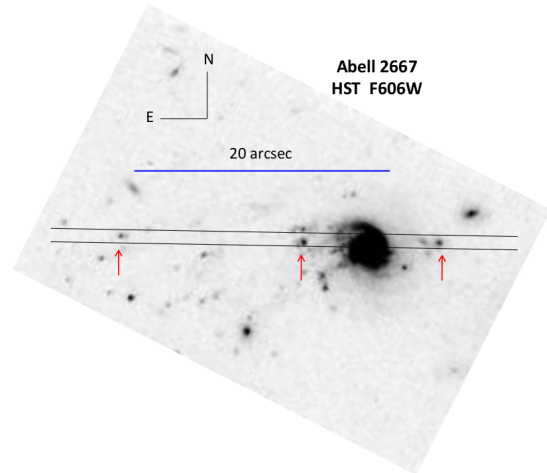


Fig. 2. Proposed position for the slit to be applied with the GTC-OSIRIS instrument on 235144-0260358. The galaxy is shown here at its right orientation.

260358’s disk and the disturbances would had been produced by gravitational effects, probably by the global cluster potential.

REFERENCES

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 Owen, F. N., et al. 2006, AJ, 131, 1974
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