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Kinematic properties of superbubbles in the Antennae, M83 and Arp 270

A. Camps-Fariña[1,2], J. Beckman[1,2,3], J. Zaragoza-Cardiel[1,2], J. Font[1,2], K. Fathi[4], P. Fabian Velázquez[5] and A. Rodríguez-González[5]

[1]Instituto de Astrofísica de Canarias, La Laguna, Spain
[2]Departamento de Astrofísica, Universidad de la Laguna, Spain
[3]Consejo Superior de Investigaciones Científicas, Spain
[4]Department of Astronomy, Stockholm University, Stockholm, Sweden
[5]Instituto de Ciencias Nucleares, Universidad Nacional de México, D.F, Mexico

Abstract. Superbubbles and large scale expansion in galaxies are important indicators of activity in galaxies: they are formed in starbursts and around active nuclei. Superbubbles can be used to give information about the star-forming region which produced them. We present in-depth results of our study of kinematically detected superbubbles using a method based on Fabry-Perot spectroscopy, which allows us to map regions of expansion across the entire disk of a galaxy. Three objects have been selected for this poster based on the interest of the results they show: two interacting galaxies, the Antennae and Arp270, at different stages of galaxy interaction, and the more isolated galaxy M83. We present the kinematic expansion maps, as well as a census of detected superbubbles and a dynamical study of their properties.

Keywords. galaxies: superbubbles, galaxies: kinematics, galaxies: evolution

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We use the method described in the poster **Fabry-Perot spectroscopy: a powerful method for detecting superbubbles in galaxy discs** to derive expansion maps of three galaxies and detect on these the presence of superbubbles. We find 10 superbubbles in the Antennae galaxies (Arp 244), 8 in M83 and 3 in the central zones of the interacting pair Arp 270. We measure their properties: radius, expansion velocity, Hα luminosity, density, mass, kinetic energy, and an approximate age. To assess the validity of our results we use hydrodynamic simulations to reproduce a well-characterised superbubble from its measured properties. The simulation successfully reproduces the bubble, in Fig. 1 we present the expansion map around the bubble and the equivalent measurement from the simulated bubble.

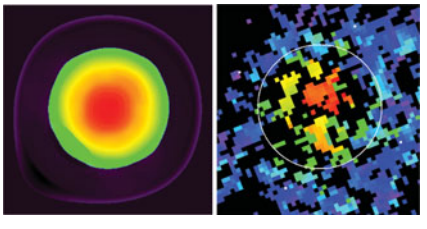

Figure 1. Comparison between a detected superbubble in the Antennae (right) and the equivalent projection of a hydrodynamical simulation done using its measured parameters. Colors represent observed line of sight expansion velocity from maximum in red through lower green-blue.

References

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