

MiniGrant RSN1

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Title:

WEAVE@INT Cluster Survey: observation of A2626, the first step towards a new unpredictable vision of the role of the environment in galaxy evolution

Associated with the “schede INAF”:

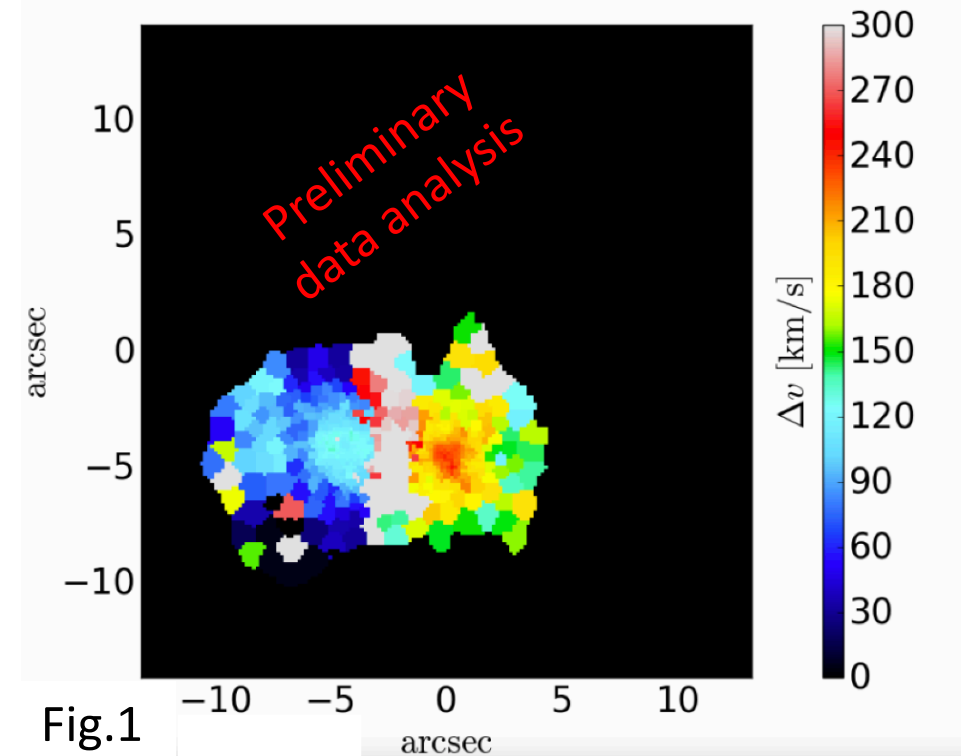
- WEAVE@WHT per la comunita` INAF Extra-Galattica (WEAVE-3) (A. Iovino)
- WEAVE Project: Overview (WEAVE-0) (A. Vallenari)

Purpose:

Use of the Science Verification phase (SV) data of a low redshift cluster, with the primary goal of testing all the WEAVE observing modes (MOS, LIFU, mIFU) to analyze the galaxy evolution at different galaxy densities down to the dwarf regime.

Summary of the progress and results obtained

- Preparatory work for observations: galaxy catalogs have been produced for the LIFU and MOS observations of the clusters A2626 and A2142 (backup cluster for the SVP).
- X-ray data analysis: The two observations available in the XMM-Newton archive of A2626 were analysed.
- First LIFU Observations: At the end of September 2023, within the SV, LIFU observations of A2142 were made. We are waiting for the data cube for scientific analysis.
- Catalogs for LIFU observations of distant clusters have also been produced. A preliminary analysis of the capabilities of the Large-IFU unit was conducted on Weave first light data (L1 data produced by the pipeline).
- In particular, through the use of the pPXF software and the implementation of MILES spectral libraries, the stellar kinematics of the galaxies NGC7318a and NGC7318b were derived in spatial regions with S/N ratio >40 identified through the Voronoi binning technique (see Fig.1 for a preliminary result).



In the future we plan to implement higher resolution spectral libraries, and the use of a double stellar component in the regions where the signal from the two galaxies overlaps. Further observations with WEAVE - LIFU are currently underway and as soon as data cubes are available they will be analyzed by the scientific team.

- The galaxy clusters surveys working team meets every two weeks via Meet, to report on the progress and activities to be done.

Critical issues:

Unfortunately, some technical problems, which are still being resolved, are delaying the start of observations with the MOS configuration. MOS observations are expected to begin in the first semester of 2024.

Nevertheless, work was done at an organizational management level within the WEAVE-Clusters group (De Grandi, Bettoni, Moretti), the Science Working Group (Bettoni) and the Editorial Board (Bettoni, chair of the EB).

Publication: The work describing the instrument has been published Jin et al 2023 MNRAS in press. (arXiv:2212.03981)

Expenses: We have currently used a minimal portion of funds due to the delay in delivery of the data cubes. It is our intention to proceed with purchases at the beginning of 2024.