Proyecto y Portafolio Digital

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Proyecto

NGC 1313

Legacy Survey Sky Browser

1. GMOS-S multi-slit spectroscopy - IRAF
2. Fabry-Perot - IDL (Interactive Data Language)
3. **Análisis físico y cinemático**

Mapas de velocidad

Datos

Physical and kinematic conditions of the local merging galaxy NGC 1487

ABSTRACT

We present optical VLT/MUSE integral field spectroscopy data of the merging galaxy NGC 1487. We use fitting techniques to study the ionized gas emission of this merger and its main morphological and kinematical properties. We measured flat and sometimes inverted oxygen abundance gradients in the subsystems composing NGC 1487, explained by metal mixing processes common in merging galaxies. We also measured widespread star-forming bursts, indicating that photoionisation by stars is the primary ionization source of the galaxy. The kinematic map revealed a rotating pattern in the gas in the northern tail of the system, suggesting that the galaxy may be in the process of rebuilding a disc. The gas located in the central region has larger velocity dispersion ($\sigma \approx 50$ km s^{-1}) than the remaining regions, indicating kinematic heating, possibly owing to the ongoing interaction. Similar trends were, however, not observed in the stellar velocity-dispersion map, indicating that the galaxy has not yet achieved equilibrium, and the nebular and stellar components are still kinematically decoupled. Based on all our measurements and findings, and specially on the mass estimates, metallicity gradients and velocity fields of the system, we propose that NGC 1487 is the result of an ongoing merger event involving smallish dwarf galaxies within a group, in a pre-merger phase, resulting in a relic with mass and physical parameters similar to a dwarf galaxy. Thus, we may be witnessing the formation of a dwarf galaxy by merging of smaller clumps at z=0.

Key words: galaxies: evolution – galaxies: abundances – galaxies: interactions

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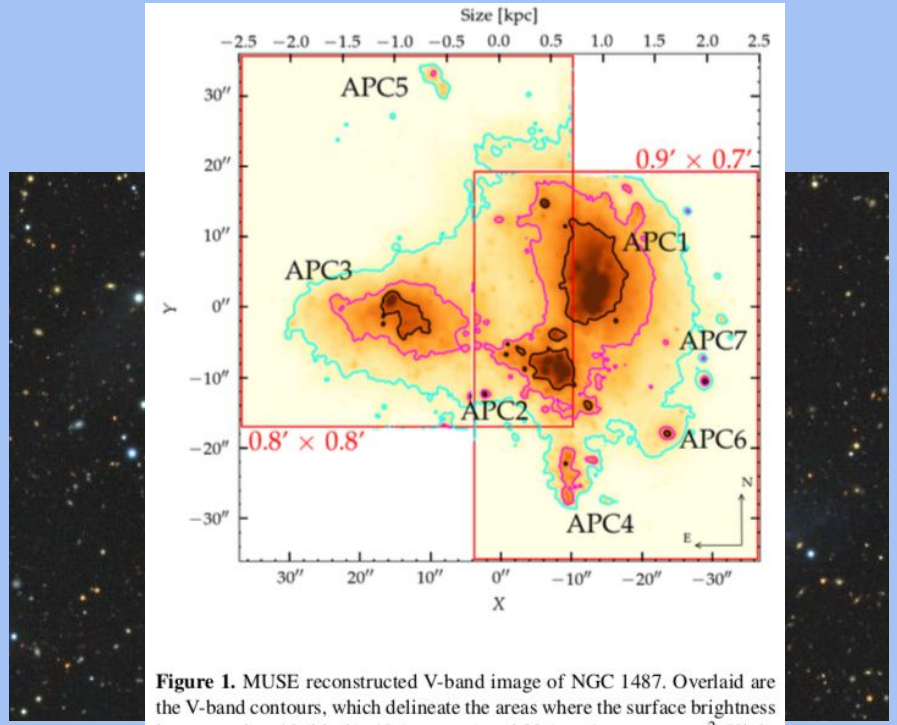


Figure 1. MUSE reconstructed V-band image of NGC 1487. Overlaid are the V-band contours, which delineate the areas where the surface brightness is greater than 18 (black), 19 (magenta) and 20 (cyan) mag arcsec^{-2}. Highlighted in darkred are the four condensations present in the merging system NGC 1487, APC1, APC2, APC3 and APC4, firstly proposed by Aguero & Paolantonio (1997) and the tidal tails, APC5, APC6 and APC7, which we propose in this work. White regions within the galaxy indicate masked pixels in the datacube. As red rectangles, we show the MUSE pointings and respective sizes of each cube used in this work.

Resultados para mapas de velocidad

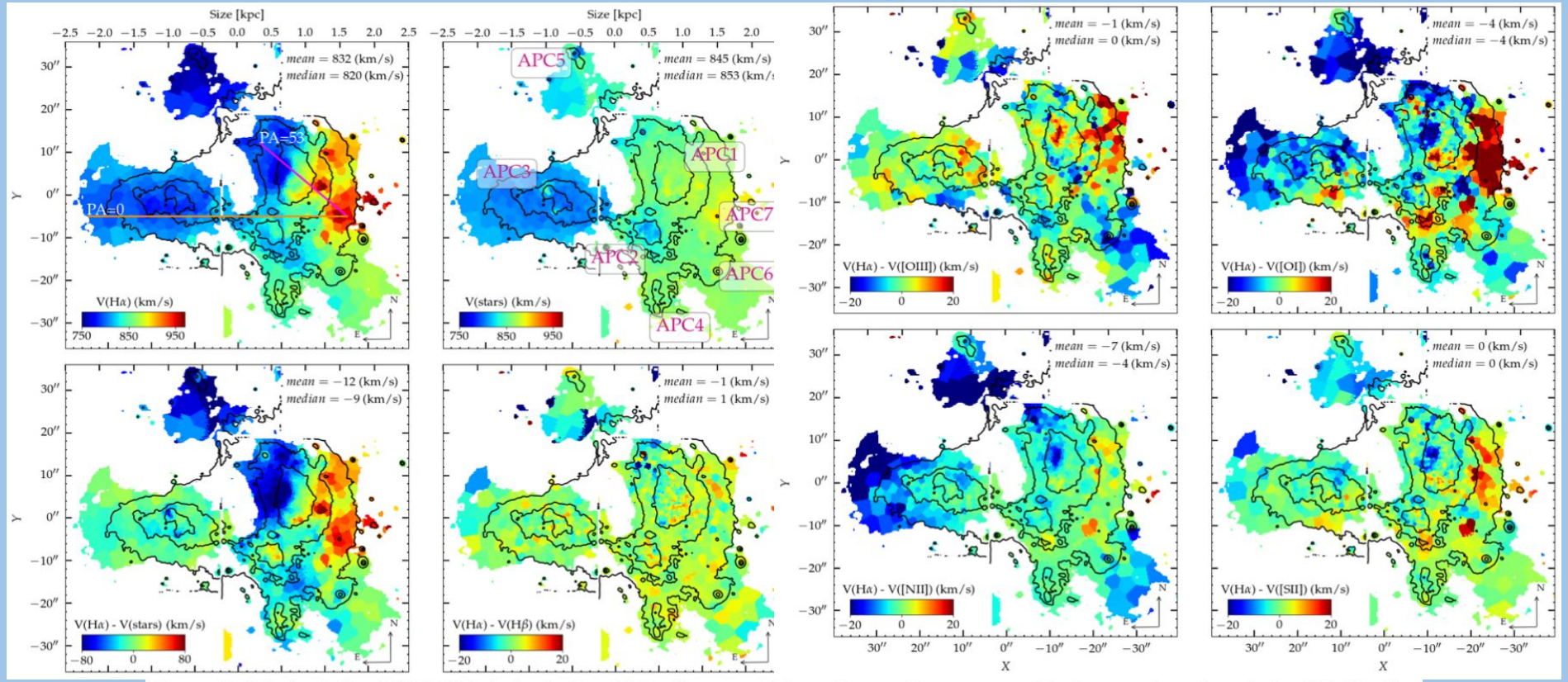
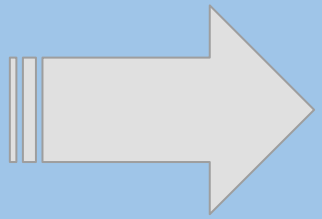


Figure 13. Velocity fields of NGC 1487 obtained using pPXF with seven nebular and one stellar component. The first row shows the velocity of the Hα line and of the stars, and the following panels show the velocity of the stars and of the other emission lines compared to Hα. Respectively: stars, Hβ, [OIII]λ5007, [OI]λ6300, [NII]$\lambda\lambda$6548, 6583 and [SII]$\lambda\lambda$6717, 6731. In the first panel, the two position angles assumed are highlighted: in magenta (PA=53 deg) shows the angle of the rotating pattern of APC1, and the golden line (PA=0) is the angle assumed of the system as a whole. In the second panel, annotated in magenta, are the four condensations present in the merging system NGC 1487, APC1, APC2, APC3 and APC4, firstly proposed by Aguero & Paolantonio (1997) and the tidal tails, APC5, APC6 and APC7, which we propose in this work.

Esquema

- Identificación de los datos
- Almacenamiento de datos
- Diagrama UML
- Pseudocódigos



➢ **Aplicación código**

- ¿En qué consiste su proyecto?
- ¿Cuál es el contexto del mismo?
- ¿Qué problema/mejora aborda su proyecto en el contexto descrito?
- ¿Cómo se conecta este proyecto con lo tratado en clases?

Portafolio Digital

https://github.com/blnblnbln/astroinf