

CHARACTERIZING THE IMPACT OF AGN IN GALACTIC KINEMATICS AND IN IONIZATION MECHANISMS: A BUTTERFLY EFFECT?

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We propose a comprehensive study on the impact of Active Galactic Nuclei (AGN) in the global kinematics and gas ionization mechanisms of spiral galaxies. We compare the H α and [OIII] λ 5007 Å velocity fields and velocity dispersions of the Seyfert galaxy NGC2410 against four non-active control sample galaxies using CALIFA survey datacubes. We found strong differences in the zero-velocity line and velocity dispersion in the central region of AGN. We estimate the region ionized to be 6 kpc radius centered in the optical nucleus.

The selected Seyfert galaxy NGC2410 belongs to the Seyfert region in BPT classic diagram, a particular diagram to identify LINERs from normal H II regions and normal AGNs (Seyferts and QSOs) on the basis of their emission lines ratios. We used flux ratios from the SDSS DR7 MPA-JHU collaboration. We obtained four galaxies control sample (UGC12810, UGC08267, NGC6361, NGC6941) based in the following criteria: a) the logarithm of the total stellar mass comparable with Seyfert galaxy within 0.1 dex, b) similar morphology - Spiral type, and c) dominant star formation according to BPT diagram. H α and [OIII] λ 5007 Å velocity fields and emission line fluxes have been extracted from the galaxies datacubes using the analysis pipeline PIPE3D.

Seyfert galaxy NGC2410 has non clear zero radial velocity line in H α velocity field unlike the straight line of control sample. Besides, in the central region

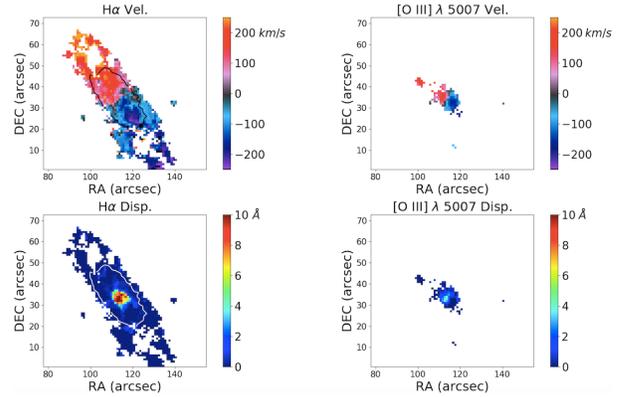


Fig. 1. Velocity field and velocity dispersion for NGC2410 galaxy using H α and [OIII] λ 5007 Å lines.

we observed that [OIII] velocity field is well defined (see Figure 1.) - it have a suddenly radial velocity change in a very small region compared with control sample. Moreover we found high velocity dispersion of H α and [OIII], in the central region of NGC2410 compared with control galaxies.

To study the spatial distribution from different ionization mechanisms, we built different diagnostic maps of each galaxy aided by the H α equivalent width. For NGC2410 we find that the AGN ionized gas spatial extension is ≈ 6 kpc², we have a first approximation where the presence of an AGN has an impact in the regions within the kpc- scale of the host galaxy, in terms of their kinematic velocities.

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