

Comparing isolated active and non-active galaxies from the CALIFA survey



I. del Moral Castro^{1,2}, B. García-Lorenzo^{1,2}, C. Ramos Almeida^{1,2} and T. Ruiz-Lara^{1,2}
¹Instituto de Astrofísica de Canarias (Spain), ²Universidad de la Laguna (Spain)



ABSTRACT

Taking advantage of recent integral field spectroscopic surveys, we select a sample of **isolated active and non-active galaxies** (barred and unbarred) **matched in mass, redshift and morphology (almost-twins)**. We analyse the spatially resolved properties of the stellar and ionised gas to study the **influence of secular processes (e.g. bars) in AGN triggering**. In this poster, we present our findings based on a pilot study of two low-luminosity AGN and their two large-scale-almost-identical non-active twins selected from CALIFA in order to **identify properties unique to AGN**.

1. PILOT SAMPLE FROM CALIFA

Two active galaxies: **NGC0214 (AGN-bar)** and **NGC2916 (AGN-nbar)** and two non-active galaxies: **NGC2253 (SF-bar)** and **NGC0001 (SF-nbar)** selected from CALIFA Survey [3] and matched in mass, redshift, inclination and morphology (almost-twins).

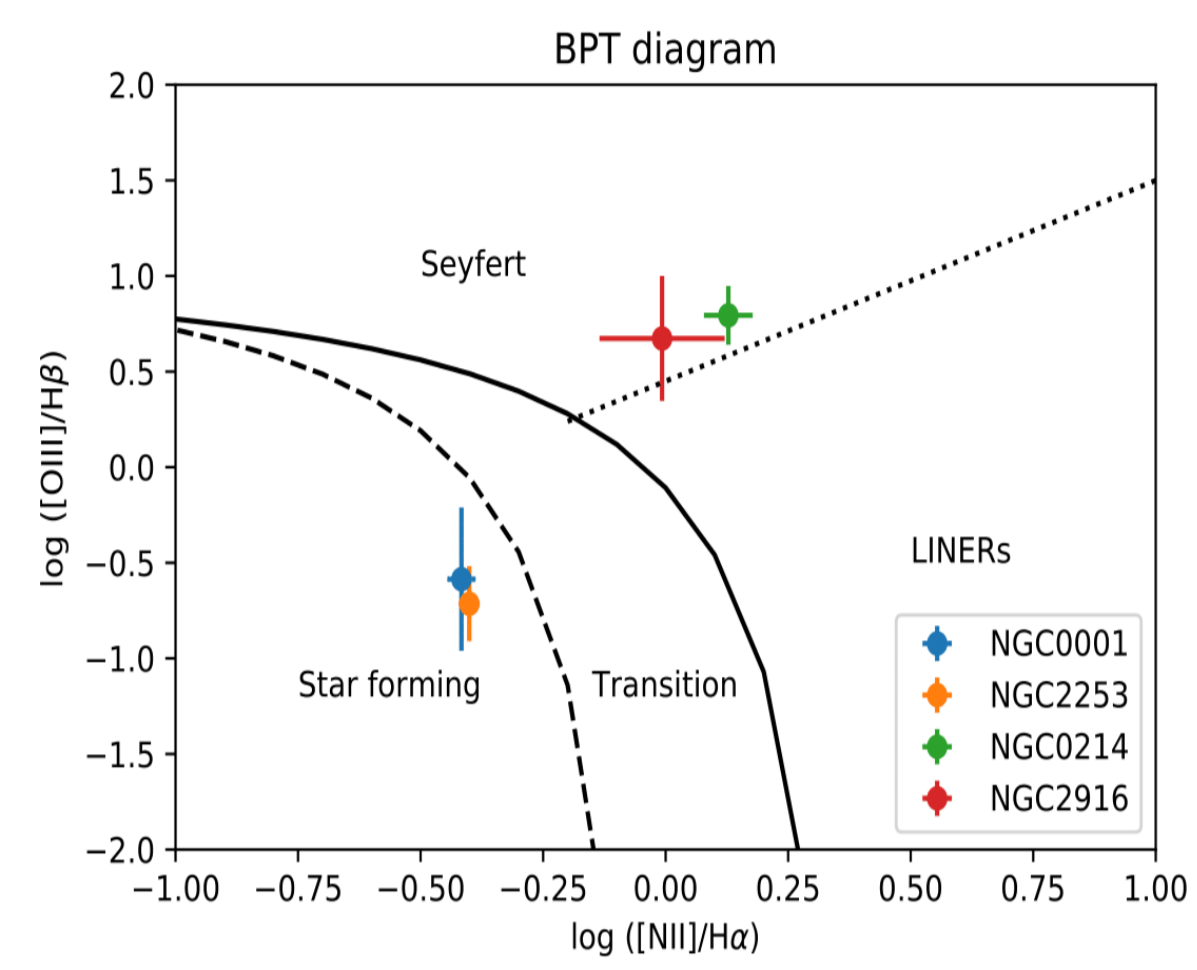
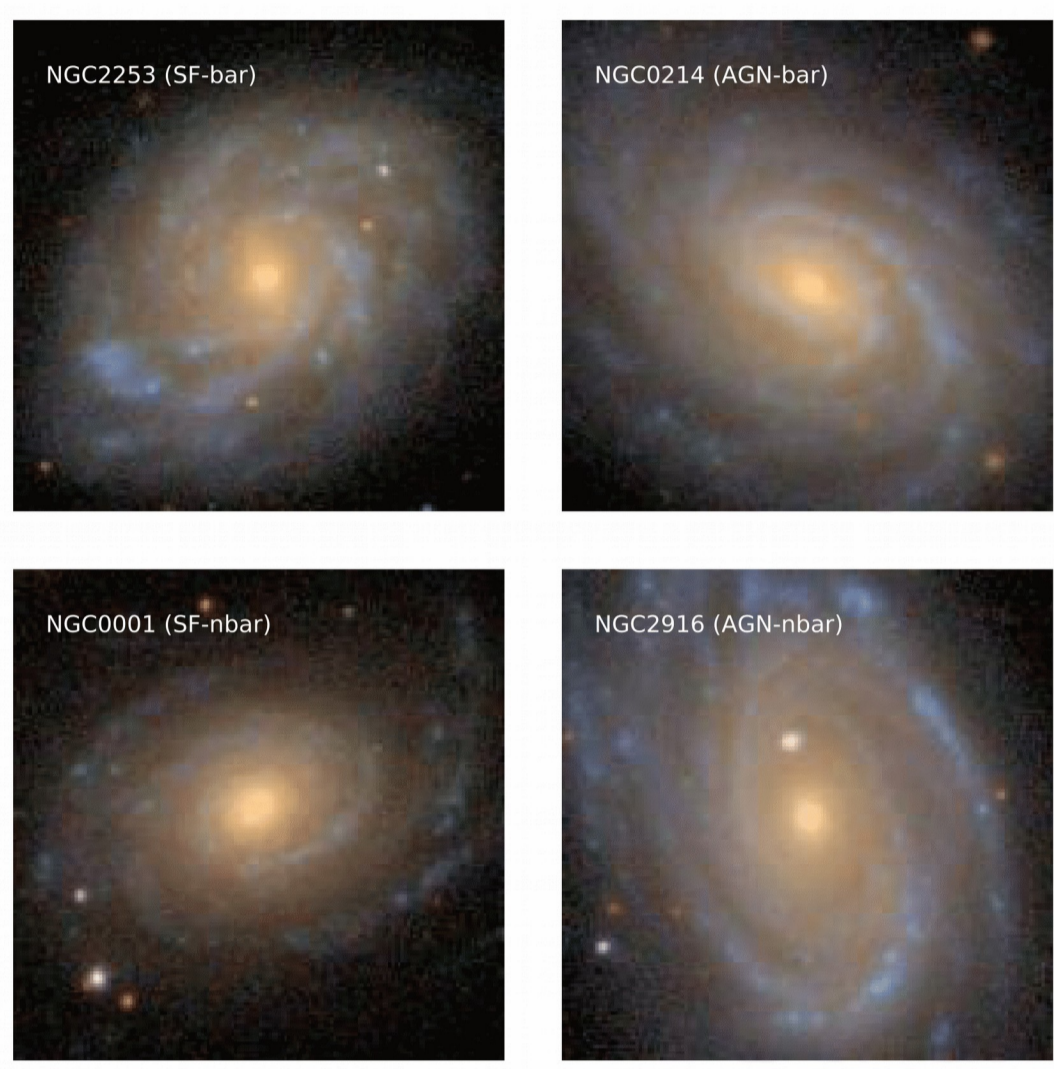
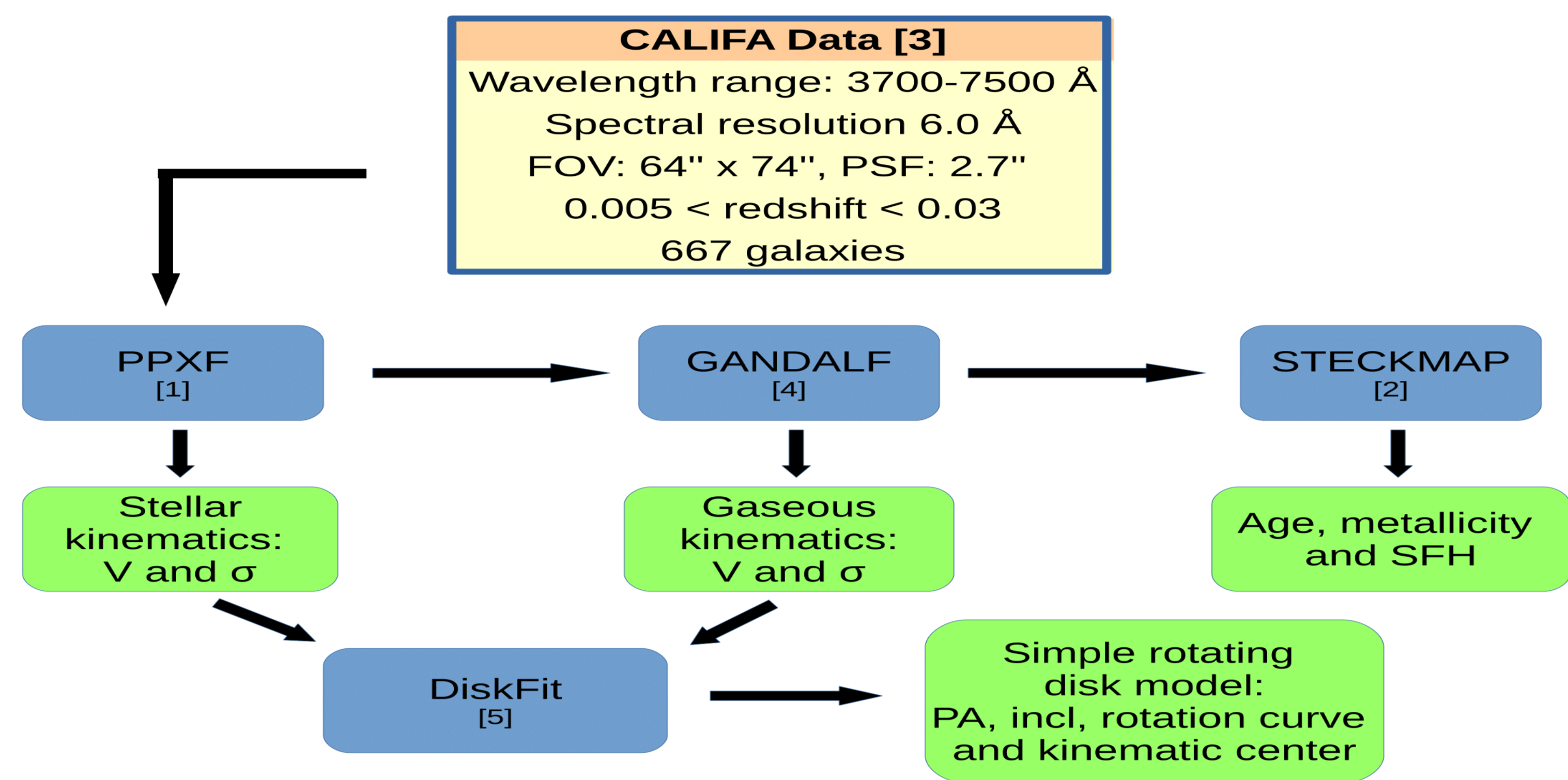


Figure 1. Color-composite SDSS images of the selected galaxies and position on the BPT diagram of the central spectrum.

2. METHODS



3. VELOCITY DISPERSION

Stellar velocity dispersion

Both **barred galaxies** show **smaller values** than their unbarred twins, regardless of having an AGN.

Ionised gas velocity dispersion

Our **active galaxies** show **larger values** in the central kpc than the non-active ones.

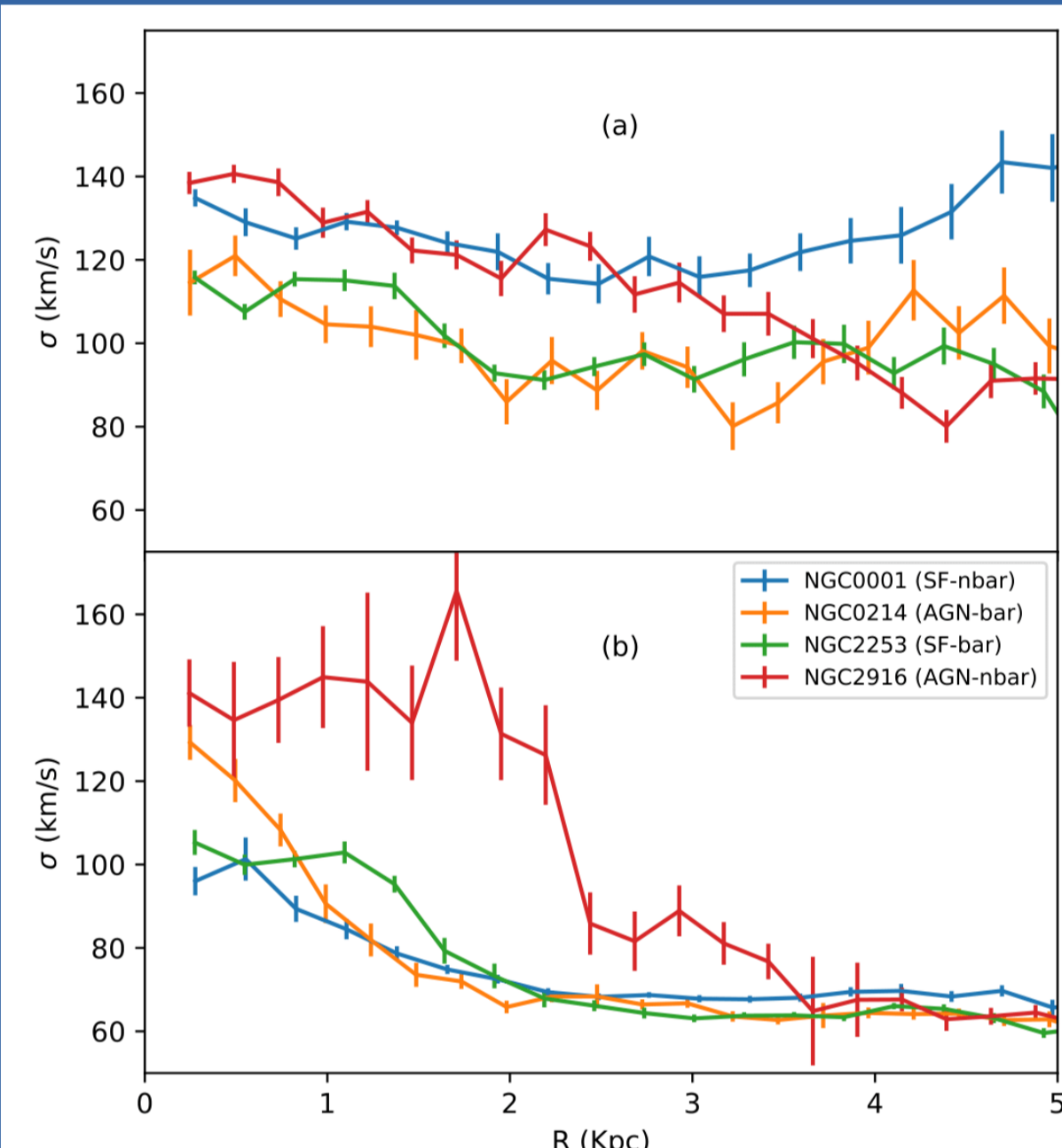
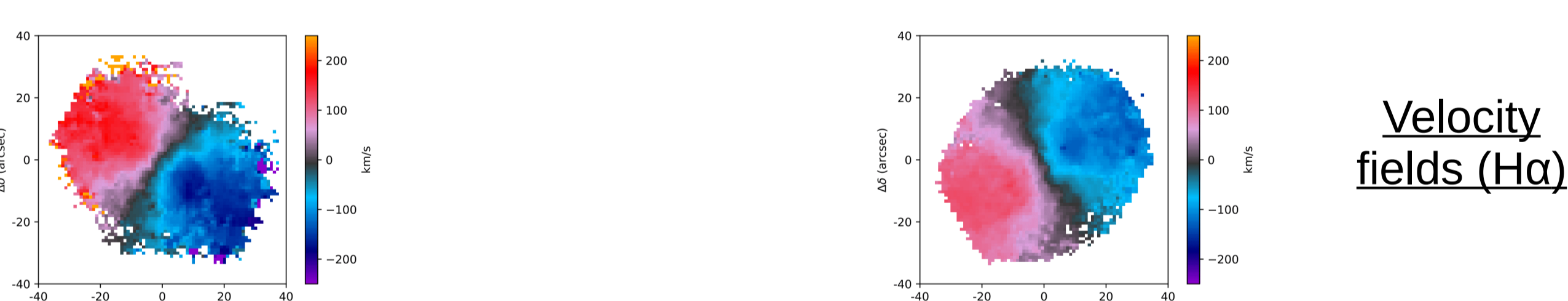


Figure 2. Radial profiles of stellar (a) and ionised gas (b) velocity dispersion.

4. KINEMATIC MODEL

NGC0214 (AGN-bar)

NGC2253 (SF-bar)



Velocity fields (H α)

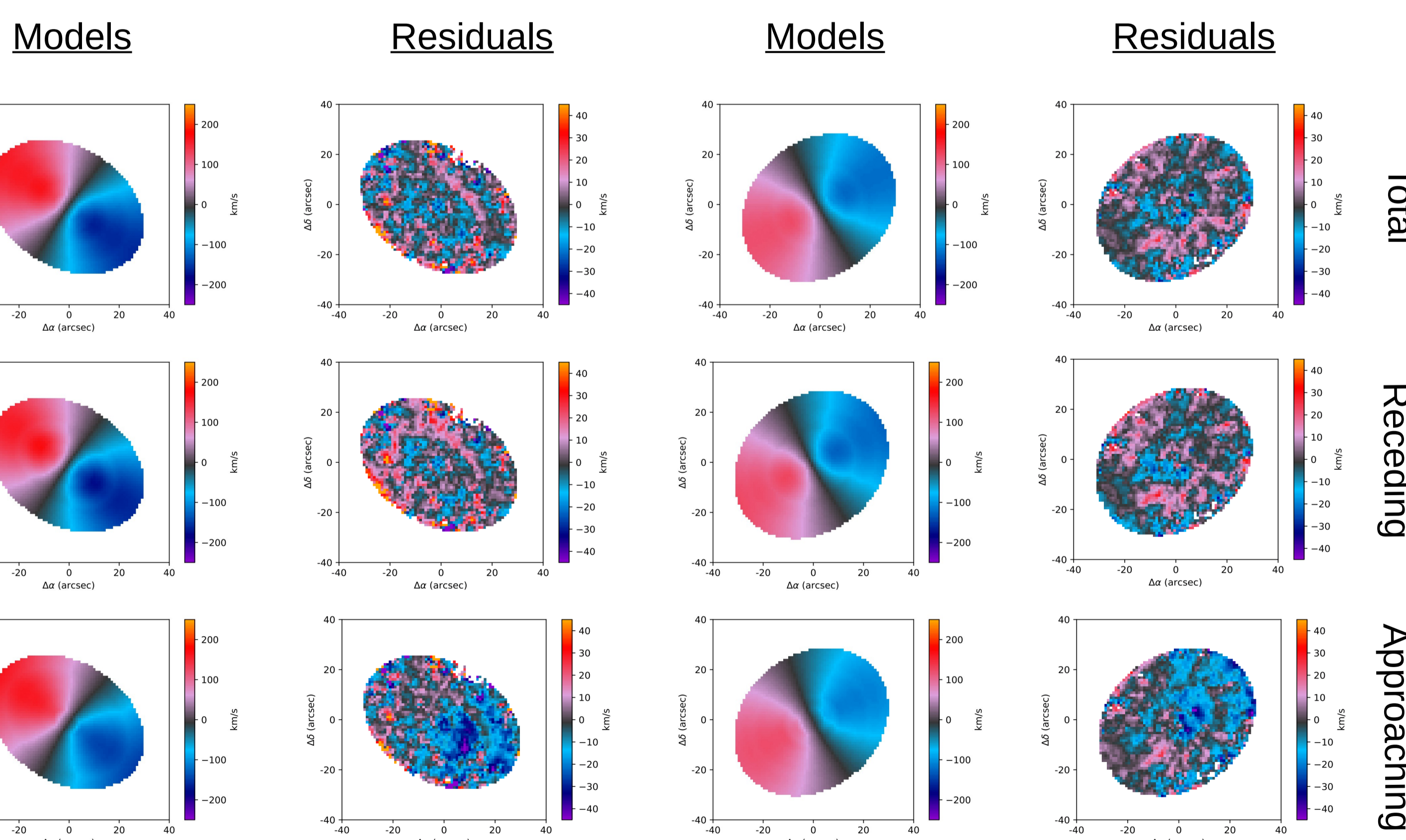
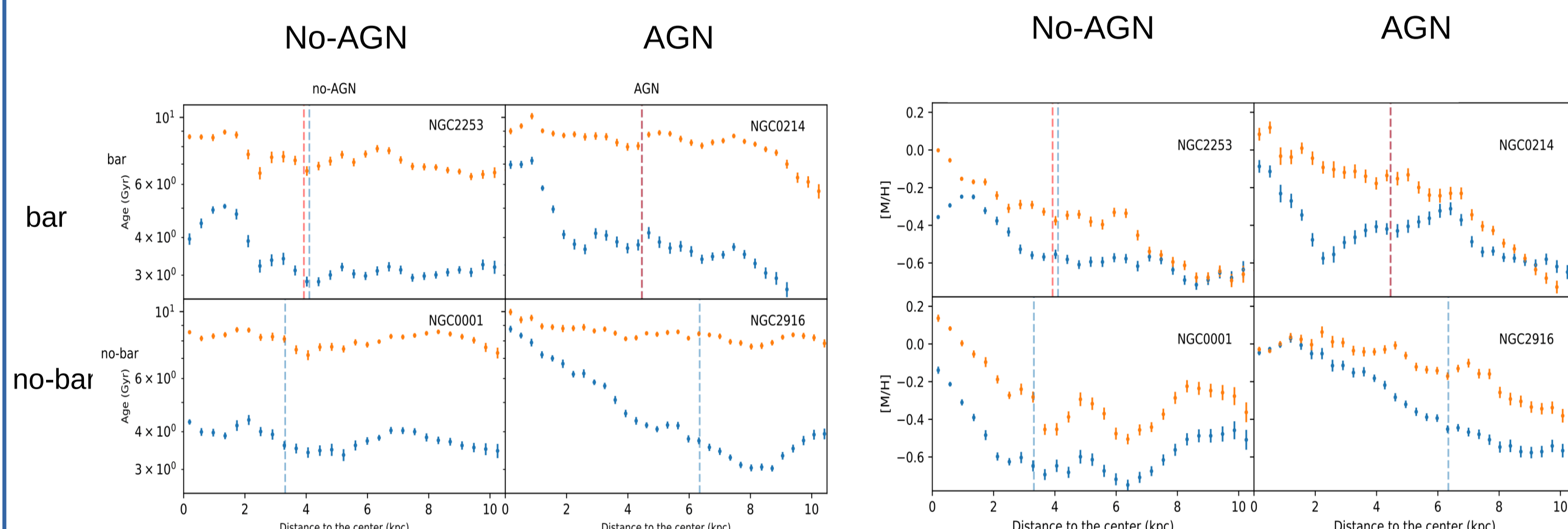


Figure 3. First row: Velocity fields (H α). Second row: velocity models and residuals for the **total fitting**. Third row: velocity models and residuals for the **receding fitting**. Fourth column: velocity models and residuals for the **approaching fitting**.

The **difference in inclination** obtained when fitting a **simple rotating disk model** to the **approaching and receding sides** for both AGN suggests that our active galaxies present more **warped disks** than their non-active twins.

5. STELLAR POPULATIONS



Figures 4 and 5. Mean luminosity (blue) and mass (orange) weighted **age and metallicity** gradients of the stellar populations as a function of radius. Blue dashed lines indicate the effective radius and red dashed lines indicate the radius of the bars.

In addition, we analyse the **spatial and radial distribution** of stellar populations of different ages.

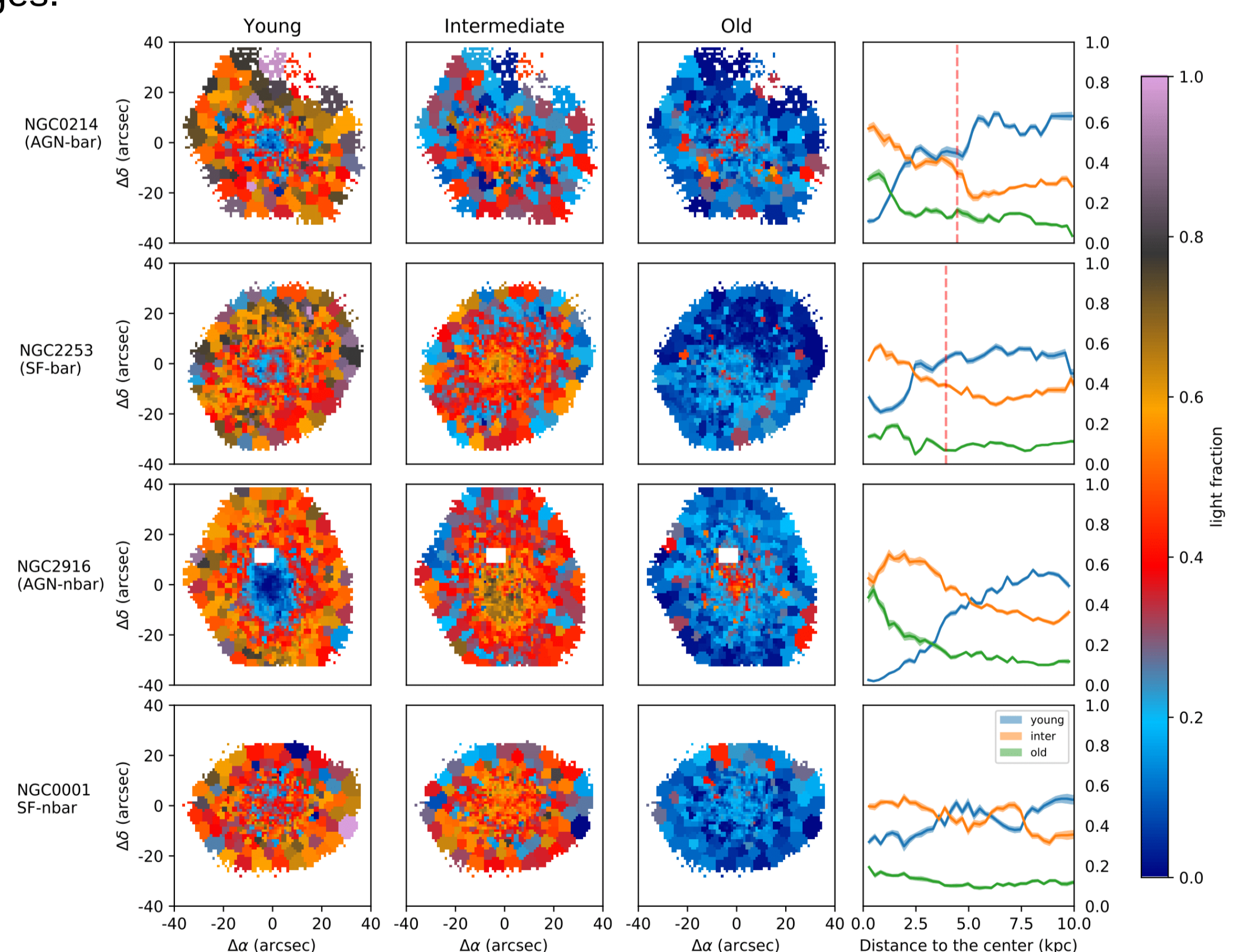


Figure 6. Maps showing the relative contribution of **young (age < 1.5 Gyr)**, **intermediate (1.5 Gyr < age < 10 Gyr)** and **old (age > 10 Gyr)** stellar populations and the radial profiles of each component. Red dashed lines indicate the radius of the bars.

Both **active galaxies** show a **lower contribution from young population** in the central kpc than their non-active twins.

Our **barred galaxies** present **lower metallicities** in the central kpc than their unbarred twins.

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CONTACT INFORMATION

Ignacio del Moral Castro

Email: imoralc@iac.es

