

Star formation and AGN triggering in Arp-Madore interacting galaxies

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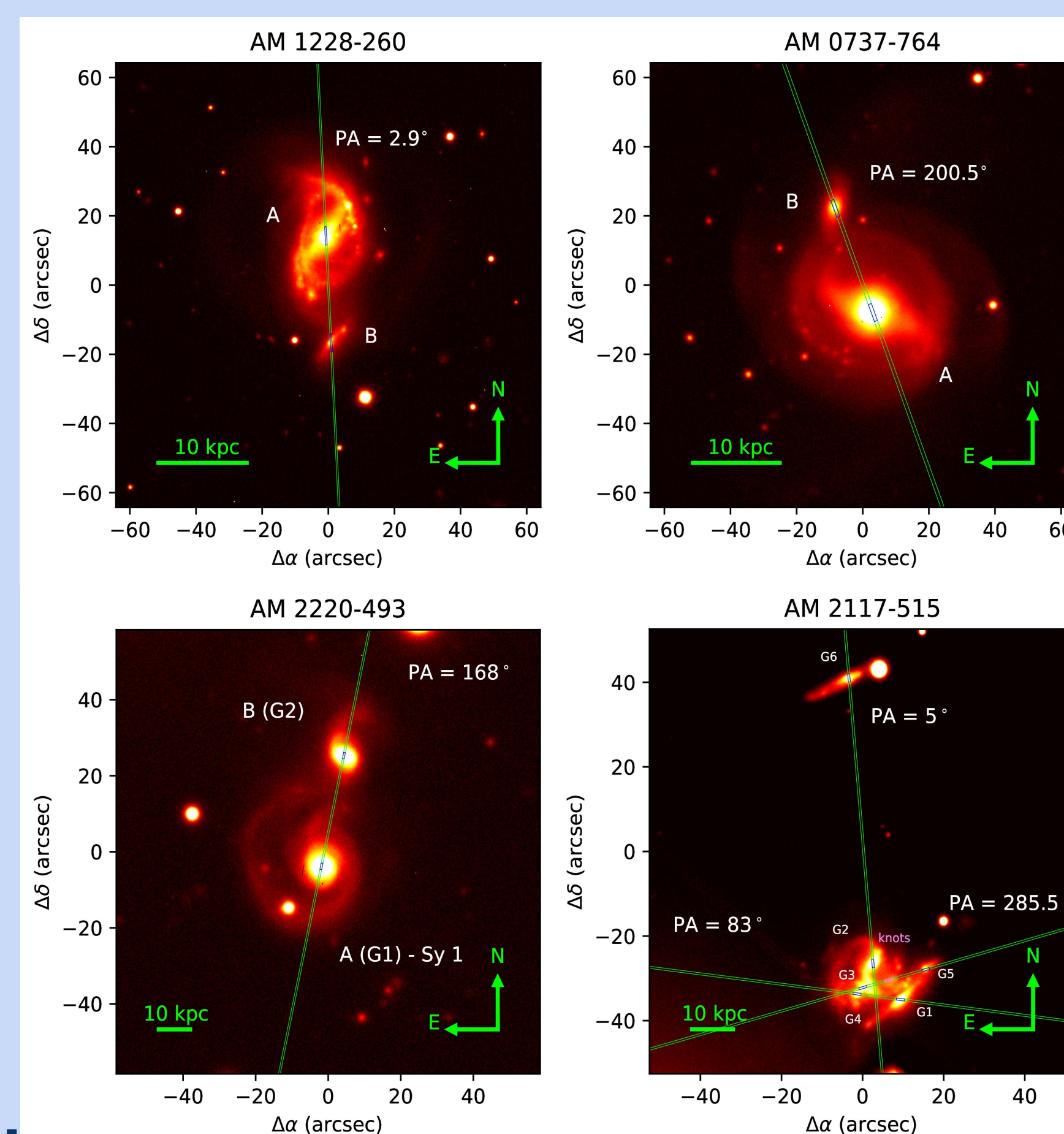
Introduction

- Galaxy interactions are known for being able to enhance star formation and trigger active galactic nuclei (AGN) in galaxies;
- However, few studies have focused on analysing the stellar populations in interacting galaxies (e.g. Krabbe et al. 2017);
- While many works suggest that interactions can induce nuclear activity (e.g. Ellison et al. 2011), other studies have found no excess of AGN (e.g. Steffen et al. 2023);

In this work, we analyse the stellar populations and ionised gas excitation mechanisms of a sample of interacting galaxies and compare them with a matched sample of isolated galaxies.

Methods

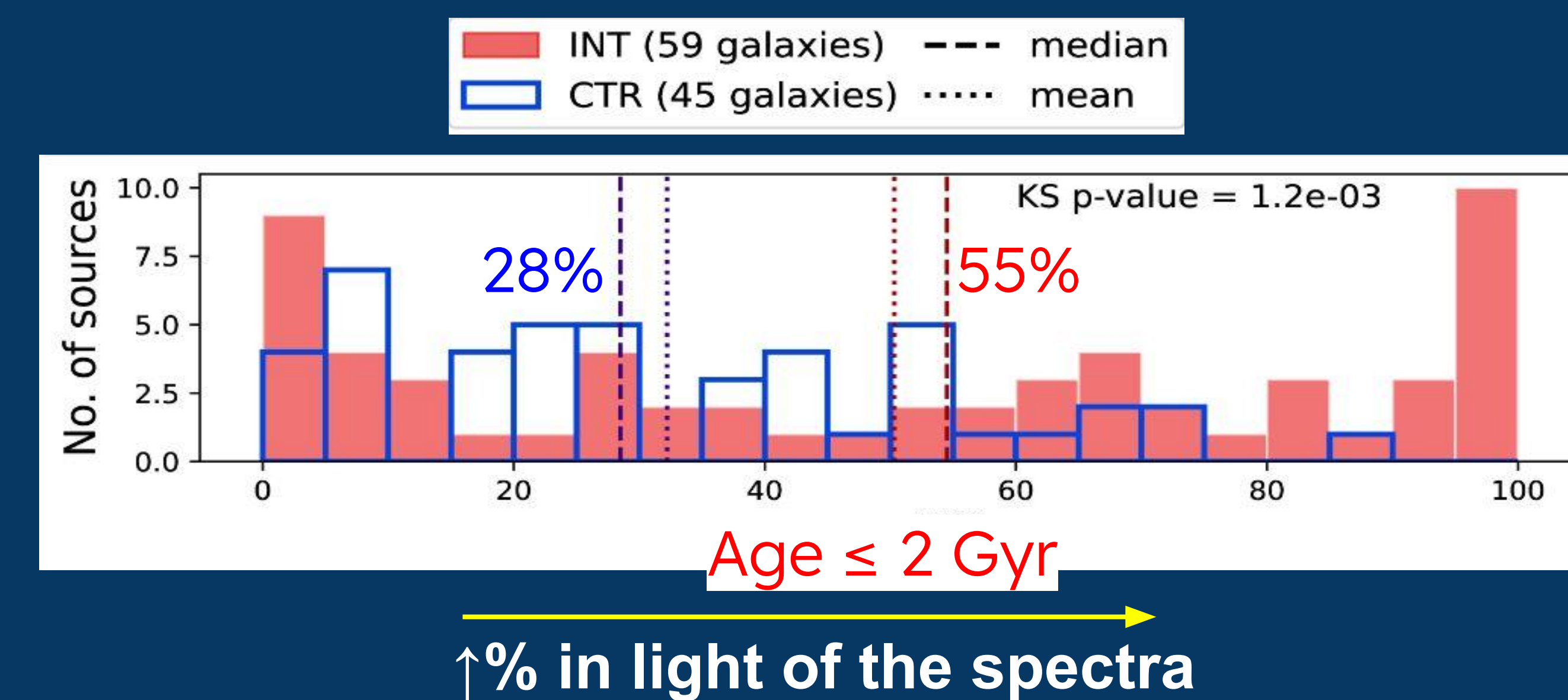
- Gemini-South/GMOS spectra of 95 galaxies from the Arp & Madore catalogue;
- INT sample:** 60 galaxies confirmed as interacting systems (19 pairs and 6 small groups);
- CTR sample:** Control sample of isolated galaxies selected from the Sloan Digital Sky Survey (SDSS) that match the INT sample in redshift, magnitude, and morphology;
- Stellar continuum:** modelled using the STARLIGHT code (Cid Fernandes et al. 2005), and a base using updated Miles V11 models (Vazdekis et al. 2016);
- Emission lines fluxes:** obtained with the IFSCUBE code (Ruschel-Dutra & Dall'Agnol De Oliveira 2020) and used to produce several diagnostic diagrams (BPTs like + WHAN) to classify the main ionisation source.



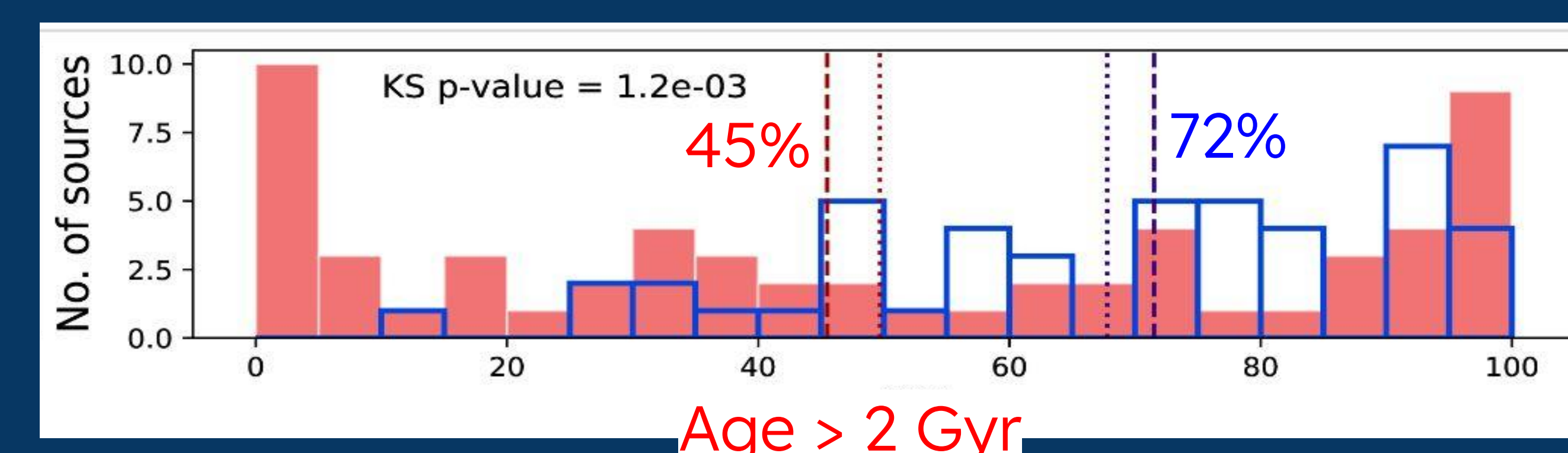
Results

Stellar populations

- The **INT** sample on median is **dominated** by stellar populations **younger than 2 Gyr**;



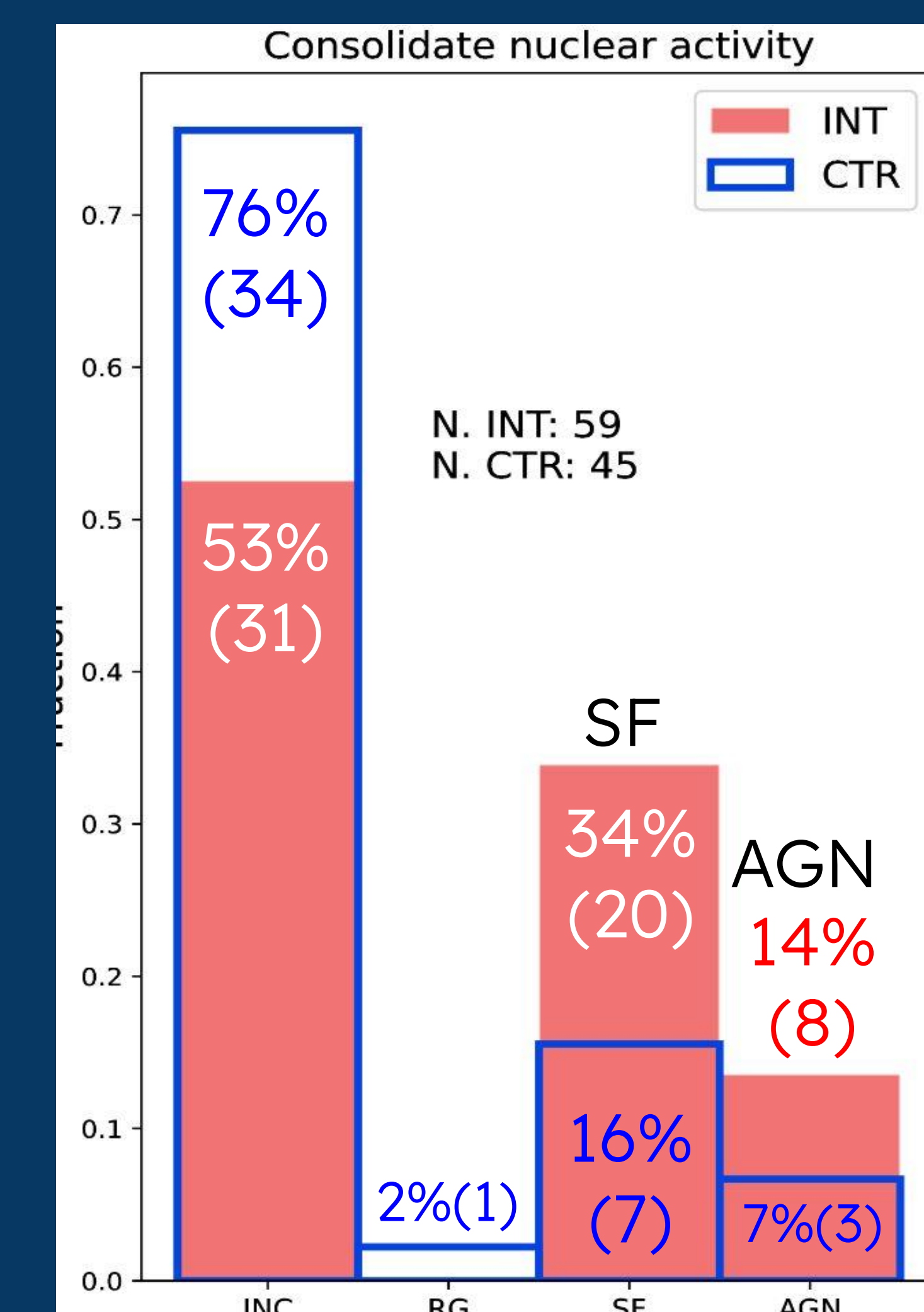
- The **CTR** sample on median is **dominated** by stellar populations **older than 2 Gyr**.



Excitation mechanisms

- Combine information from **5 diagnostic diagrams**, requiring a consistent classification in 4% diagrams:
 - % INT AGN / % CTR AGN ~ 2**
 - % INT SF / % CTR SF ~ 2.2**
- Using distinct combinations of diagrams and sample restrictions - **AGN excess remains!**

% INT AGN / % CTR AGN ~ 1.6 - 4.0



Take home messages

- ★ Most of the interacting galaxies studied are dominated in light fractions by stellar populations younger than 2 Gyr.
- ★ We find a persistent AGN excess in the interacting sample, with an AGN fraction from 1.6-4 times the one of the control sample.

