

Objective of the research

To investigate the contamination of Active Galactic Nuclei (AGN) on a restframe U-V and V-J colour-colour space

Background

- + AGNs host galaxies are known to change the overall shape of a Spectral Energy Distribution (SED)
- + The UVJ diagram are used to categorise galaxies based on specific bands
- + If the change in SED is consistent to UVJ diagram, the AGN host galaxies can be wrongly classified.

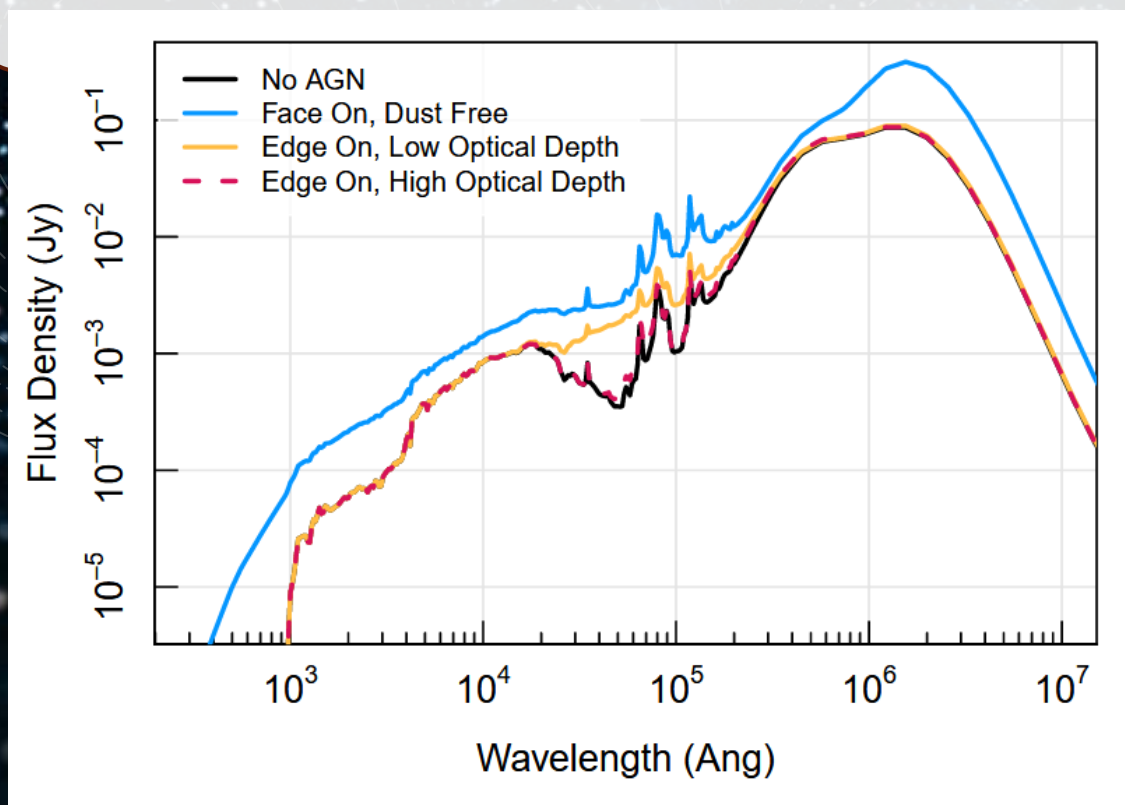


Figure1: Galaxy SED plot without AGN (black line),with AGN emission (blue line) [1]

Method

- High quality data selected from large ZFOURGE Survey [2]
- And data analysed were galaxies with stellar mass($\log[M/M_{\odot}] > 10$ and between redshift of $1 < z < 4$.
- Code Investigating GALaxy Emission (CIGALE)[3] approach to separate AGNs was taken and generated AGN luminosity data of 1,000 galaxies

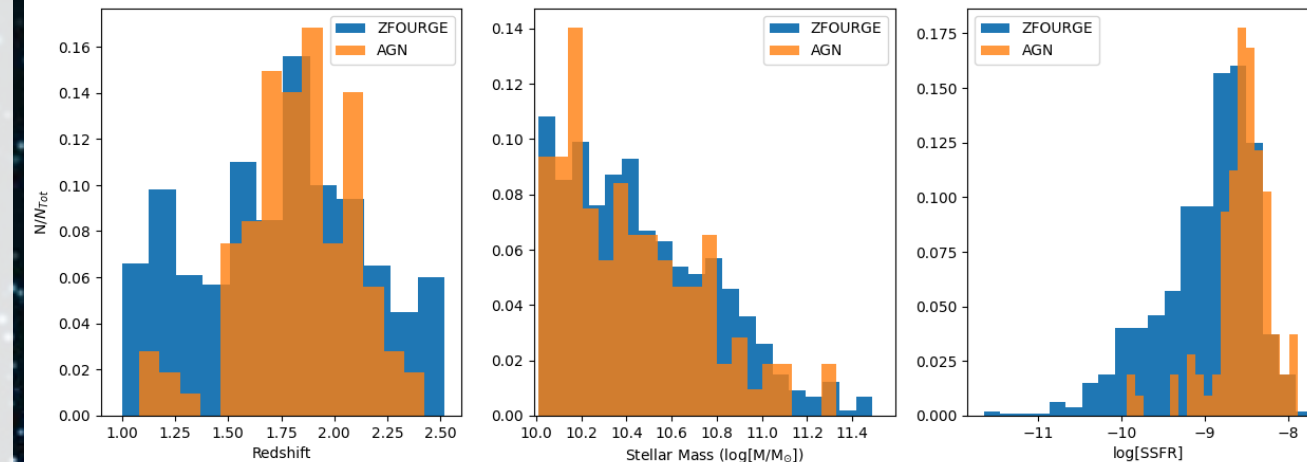


Figure 3: Distribution of AGN host vs non-AGN galaxies in redshift (left), Stellar mass (center), and star-formation rate (right)

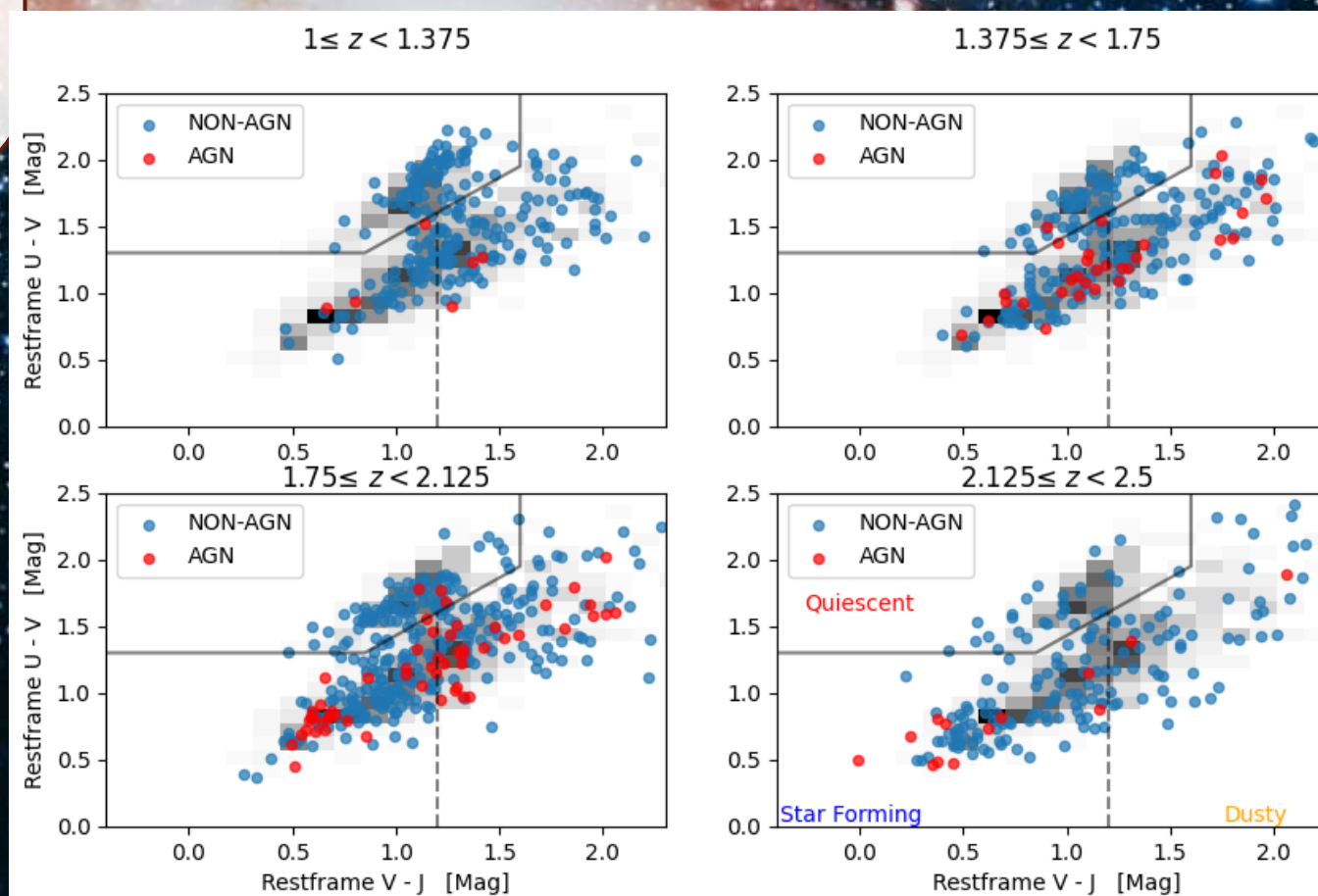


Figure 2: UVJ diagrams (in redshift bins) of Non-AGN and AGN host galaxies against ZFOURGE data in the background

Results

- AGN host galaxies are positioned throughout all stages of the galaxy evolution (Dusty, star-forming, Quiescent) with no trend observed among the AGN host only.
- We found minimal signs of contamination caused by an AGN on the U-V versus V-J colour-colour space

References

- [1] Ciesla, L., V. Charmandaris, A. Georgakakis, E. Bernhard, P. D. Mitchell, V. Buat, D. Elbaz, et al. 'Constraining the Properties of AGN Host Galaxies with Spectral Energy Distribution Modelling'. *Astronomy & Astrophysics* 576 (April 2015): A10. <https://doi.org/10.1051/0004-6361/201425252>.
- [2] Straatman, Caroline M. S., Lee R. Spitler, Ryan F. Quadri, Ivo Labbe, Karl Glazebrook, S. Eric Persson, Casey Papovich, et al. 'The FourStar Galaxy Evolution Survey (ZFOURGE): Ultraviolet to Far-Infrared Catalogs, Medium-Bandwidth Photometric Redshifts with Improved Accuracy, Stellar Masses, and Confirmation of Quiescent Galaxies to Z~3.5'. *The Astrophysical Journal* 830, no. 1 (10 October 2016): 51. <https://doi.org/10.3847/0004-637X/830/1/51>.
- [3] 'CIGALE – Code Investigating GALaxy Emission'. Accessed 9 February 2024. <https://cigale.lam.fr/>.