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CSIC
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INSTITUTO de ASTROFISICA de ANDALUCIA
I·A·A

EXCELENCIA SEVERO OCHOA

# MEASURING EMISSION LINES IN J-PAS

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We present a new method based on Artificial Neural Network (ANN) to detect and measure the main emission lines within the optical range of the spectrum in J-PAS. We are able to constrain the EW of *Hα*, *Hβ*, [*NII*]λ6584 and [*OIII*]λ5007 lines within 0.038 0.058,0.066 and 0.073 dex respectively. We predict the [*NII*]/*Hα* and [*OIII*]λ5007/*Hβ* ratios within 0.097 and 0.072 dex. The ANN is trained with synthetic J-PAS magnitudes extracting from CALIFA and MaNGA spectra and is tested over SDSS datasets over a wide range in redshift ($0 < z < 0.35$).

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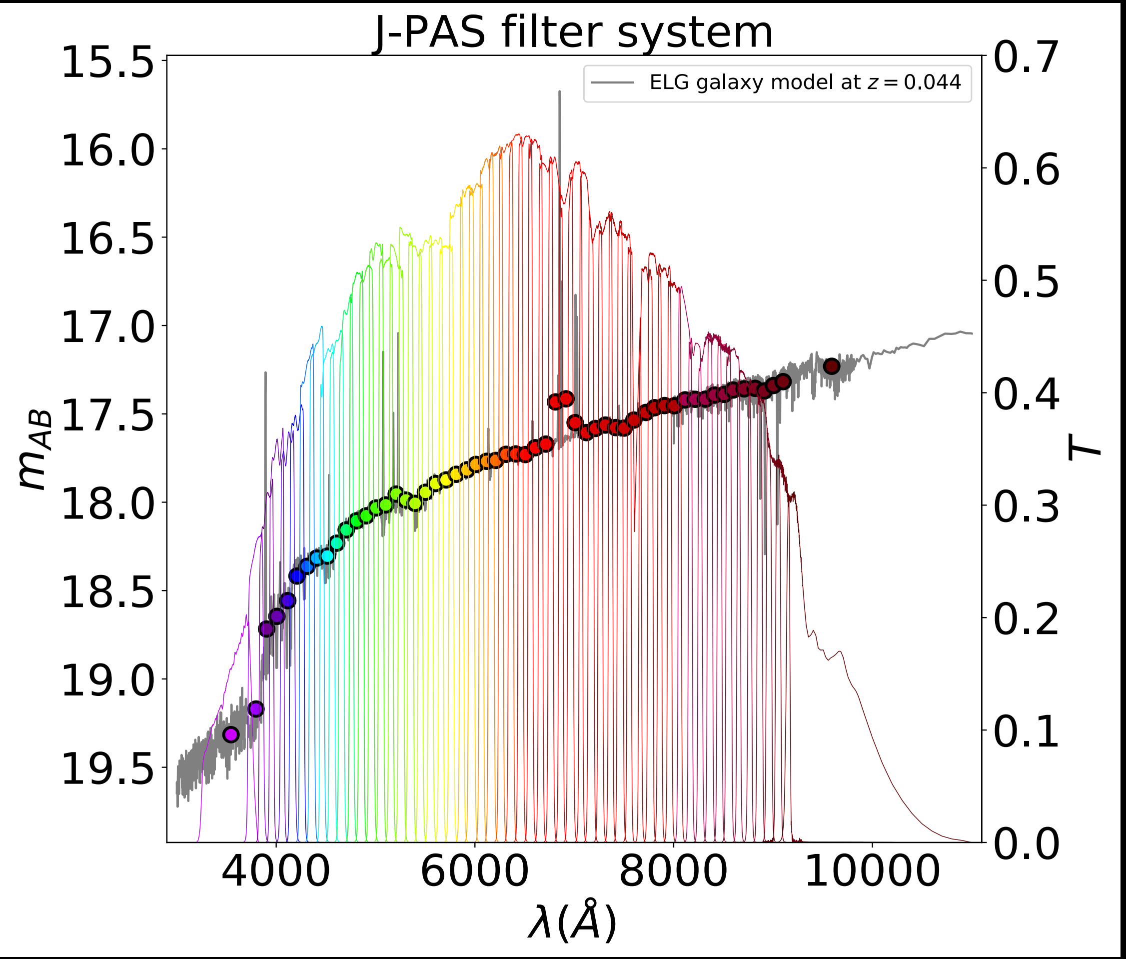
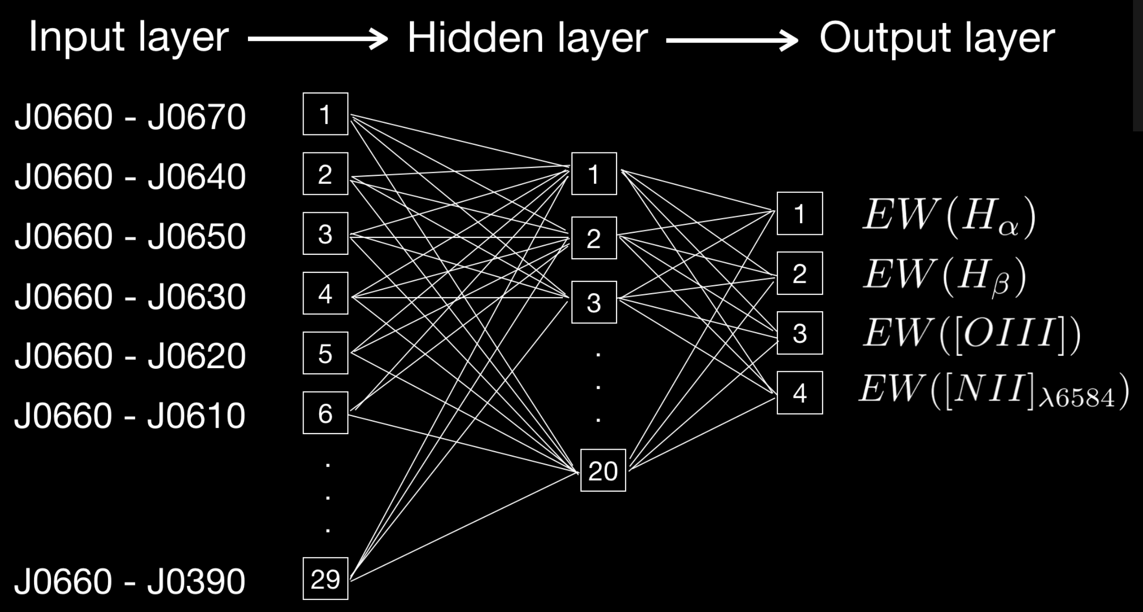
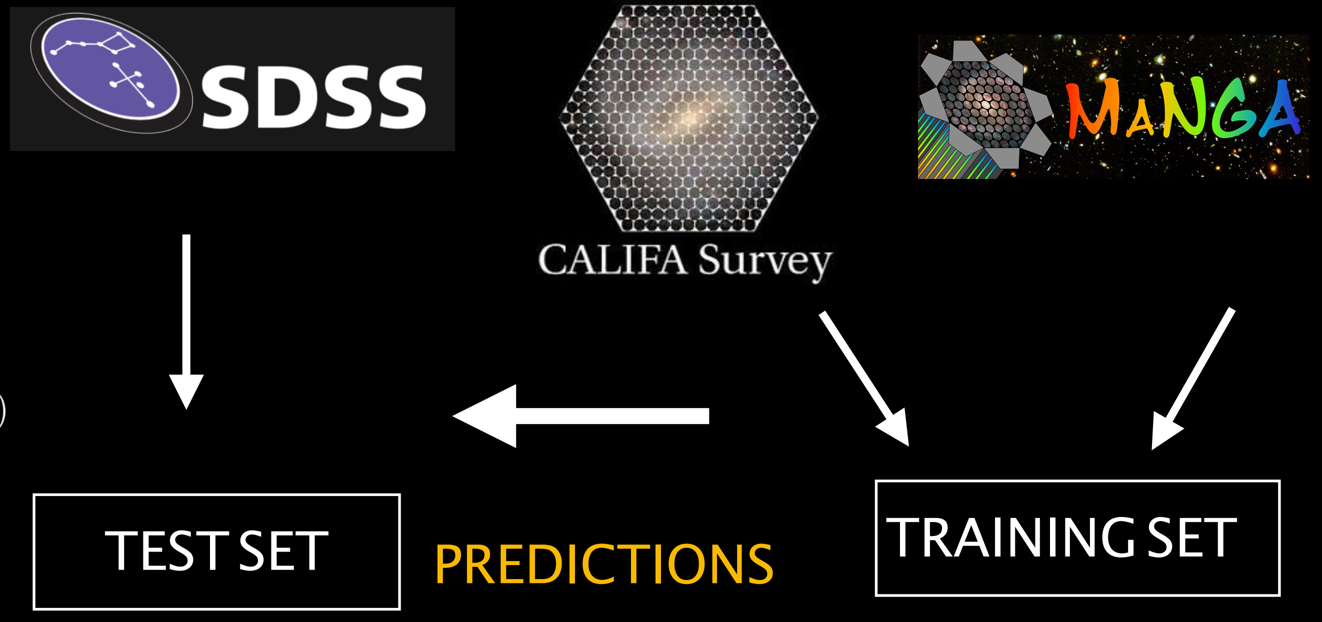
# J-PAS: a survey for galaxy evolution.



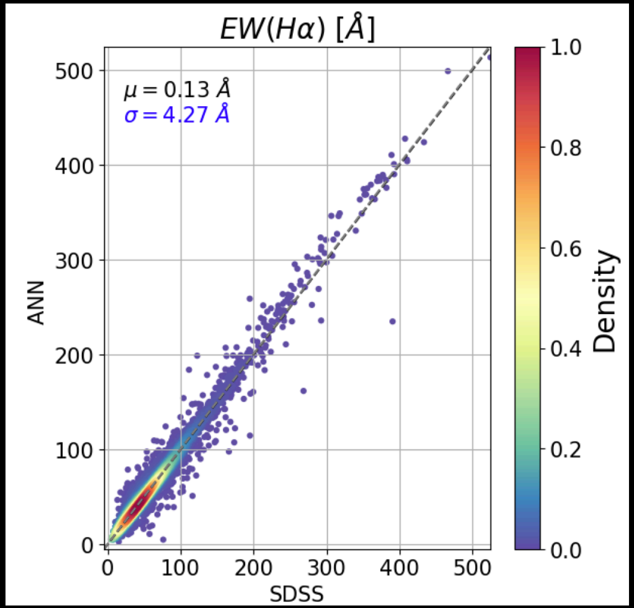

# NEURAL NETWORKS TO MEASURE EMISSION LINES

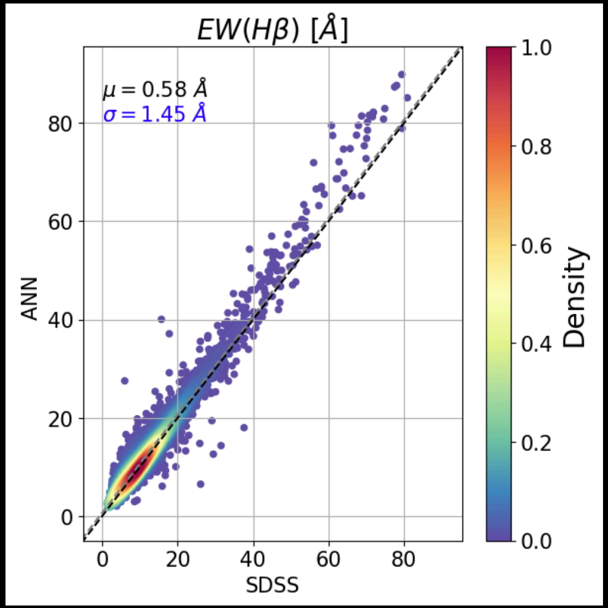


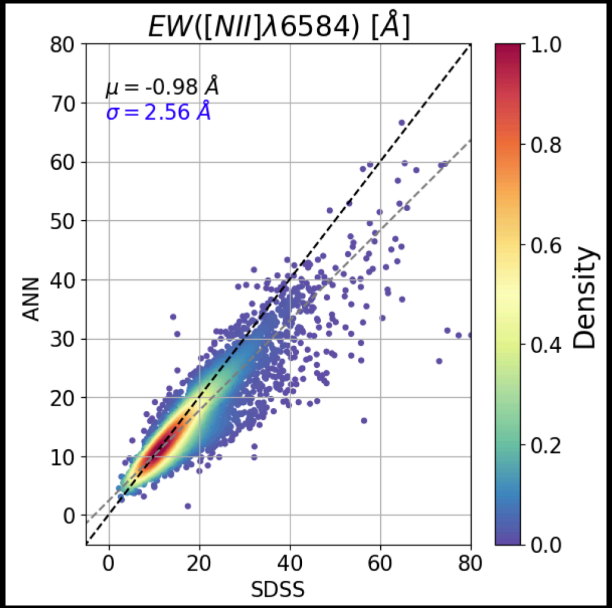



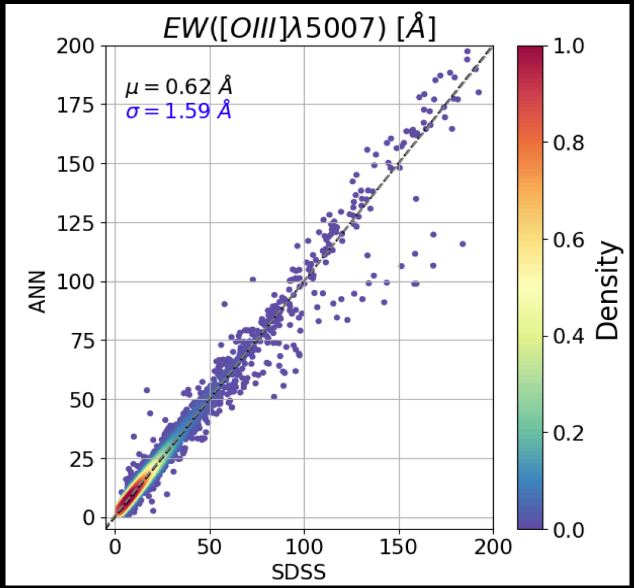

We train the NN with synthetic magnitudes of MANGA and CALIFA and make predictions with SDSS galaxies.

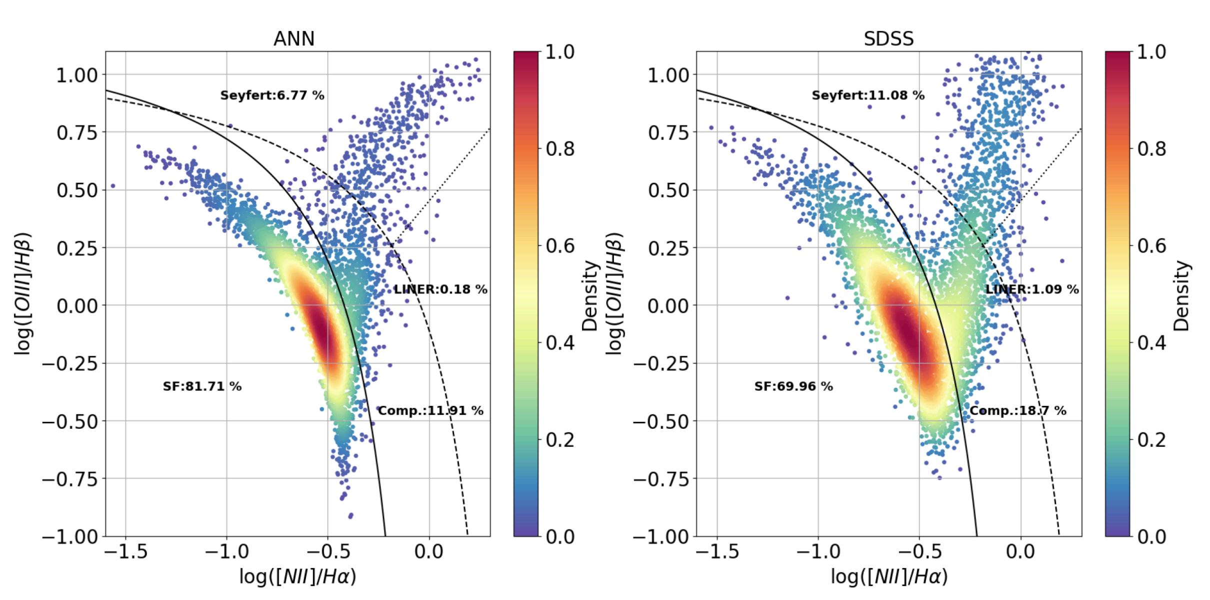
# RESULTS: EQUIVALENT WIDTHS AND BPT:



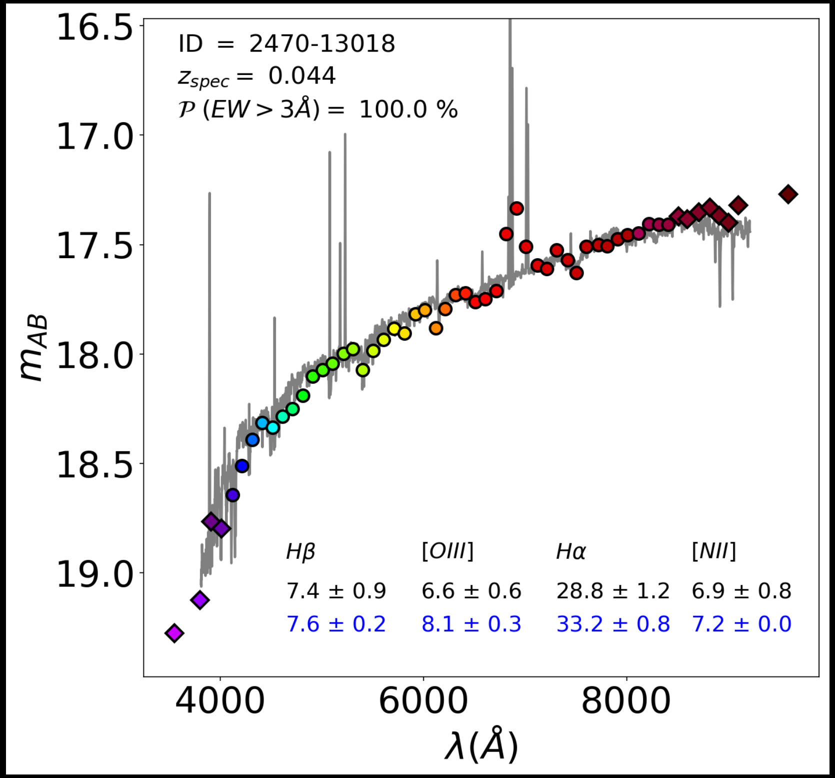



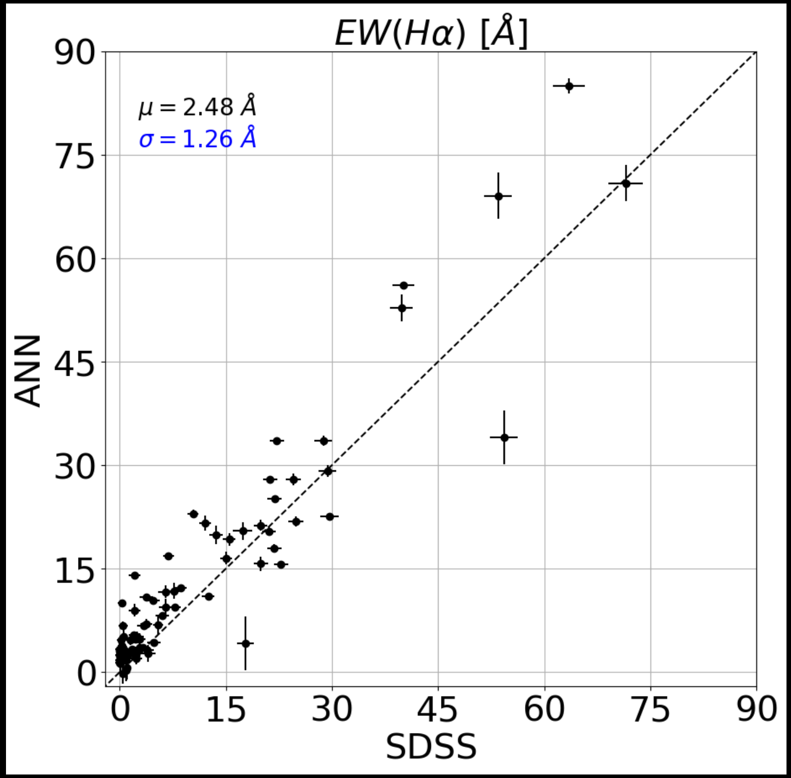



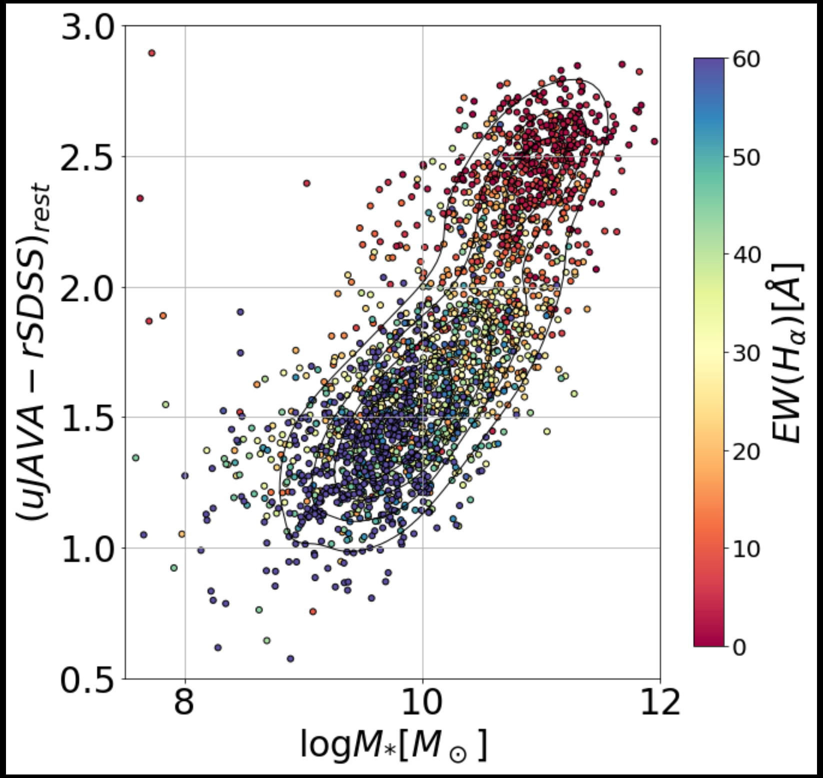



# RESULTS: MINI-J-PAS, AEGIS FIELD :



# Conclusion and outlook

- J-PAS will observe 8000 $deg^2$ of the northern sky obtaining complete sample of galaxies up to $r_{SDSS} < 22.5$
- The ANN method allows us to measure and detect emission lines for galaxies $z < 0.35$
- We can classify galaxies according to their position in the BPT diagram.
- We can study the luminosity function of ETGs and LTGs in J-PAS.
- Machine learning techniques are essential to deal more efficiently with current and future surveys in astronomy.