Homework LLL

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1 SPECTRAL CLASSIFICATION

Follow the methods obtains from Balogh et al. (1999) with the data from Dressler et al. (1999), the aim of this essay is replicate the same figures 9 and 11 from the first paper mentioned with the data of the second, to understand how the classification of Balogh is better in fuction to separete between star forming and passive galaxies.

2 METHODS

One of the first thing that we do to understand the comparison is to compare the meta-data of the data with the aim to homogenize the tables. In the case of Dressler et al. (1999) we have: *the EW of the Hδ is negative when the line present* ***emission*** (see figure 1). In comparison, the description about this two line features in Balogh et al. (1999) is: ... *When the EW [O II] index is positive the line is in emission, while the EW Hδ index is positive when the line is in* ***absorption***.. This implies that the data for *Hδ* from the Dressler et al. (1999) catalogue is the same in both catalogues,and [O II] needs to be multiplied by −1 to homogenize the data. Doing that, we replicate the fig. 9 and fig. 11 from the paper of Balogh et al. (1999) (see figure 2).

Using a `python` libraries, we made the sames figures (see figure 3 and figure 4)

3 ANALYSIS

REFERENCES

Balogh M. L., Morris S. L., Yee H. K. C., Carlberg R. G., Ellingson E., 1999, ApJ, 527, 54
Dressler A., Smail I., Poggianti B. M., Butcher H., Couch W. J., Ellis R. S., Oemler A. J., 1999, VizieR Online Data Catalog, p. J/ApJS/122/51

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NOTES ON THE PARAMETERS IN TABLES 4A AND 4B

Column	Parameter	Units	Format	Comment
1.....	CLUSTER		A6	Cluster
2.....	ID		I4	ID in spectroscopic catalog for cluster
3.....	z		F7.4	Redshift
			A1	Redshift quality; colon indicates questionable identification
4.....	Q		I2	Quality of spectrum: 1 = High, 4 = Low
5.....	[O II]	Å	F7.1	Rest frame EW of [O II] 3727
			A1	Quality of [O II] 3727 EW measurement (colon indicates questionable)
6.....	$H\delta$	Å	F4.1	Rest frame EW of Hδ, −ve indicates emission
			A1	Quality of Hδ EW measurement (colon indicates questionable)
7.....	D4000		F5.2	Break strength index
8.....	CLASS		A11	Spectral classification in scheme described in § 3.3
9.....	δRA	arcsec	F7.1	RA offset from field center in Table 2
10	δDec	arcsec	F7.1	Dec offset from field center in Table 2
11	ID_{HST}		I5	ID in photometric catalog for cluster[a]
12	X	pixels	I5	X coordinate on WFPC2 frame[a]
13	Y	pixels	I5	Y coordinate on WFPC2 frame[a]
14	MORPH		A12	Galaxy morphology[a]
15	T		I2	T type[a]
16	D		I2	Visual disturbance index[a]
17	INT		A6	Interpretation of disturbance[a]
18	MAG	Mag	F5.2	Total magnitude in F702W/F814W from WFPC2 frame[a,b]
19	COL	Mag	F5.2	Aperture color from WFPC2 frame[a,c]
20	MAG_{DG}	Mag	F6.2	Magnitude from ground-based imaging published in DG92[d]
21	COL_{DG}	Mag	F6.2	Color from ground-based imaging published in DG92[d]
22	RUN		A6	Code giving details of observing run[e]
23	MASK		A10	Mask and object slit identifier
24	FEATURES		A23	Spectral features identified; see § 3.1
25	COMMENTS		A130	Description of features in spectrum

[a] See S97 for more details.
[b] Magnitudes are in F702W for Cl 0303+17, Cl 0939+47, 3C 295, Cl 1447+26 and Cl 1601+42, and in F814W for Cl 0016+16, Cl 0024+16, Cl 0054−27, A 370 Field 2, Cl 0412−65, Cl 0939+47 Field 2.
[c] WFPC2 $V_{555}-I_{814}$ color information is available for: Cl 0016+16, Cl 0054−27, A 370 Field 2, Cl 0412−65, Cl 0939+47, and $B_{450}-I_{814}$ colors for Cl 0024+16.
[d] Aperture r-band magnitude from DG92, colors are aperture $(g-r)$ measurements in all instances.
[e] [P/W/N]<MONTH><YEAR>, P = Palomar 5 m, W = WHT, N = NTT, or DG92.

Figure 1. Capture of the table 5 from Dressler et al. (1999)

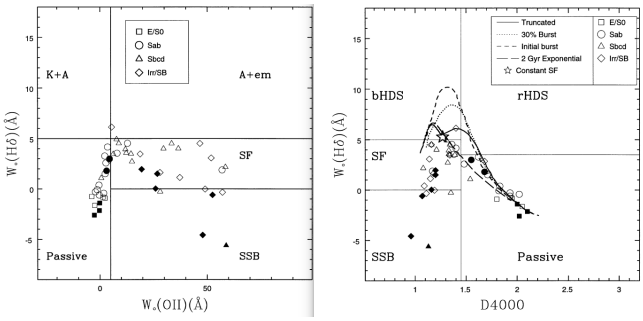

Figure 2. figures 9 and 11 from the paper of Balogh et al. (1999)

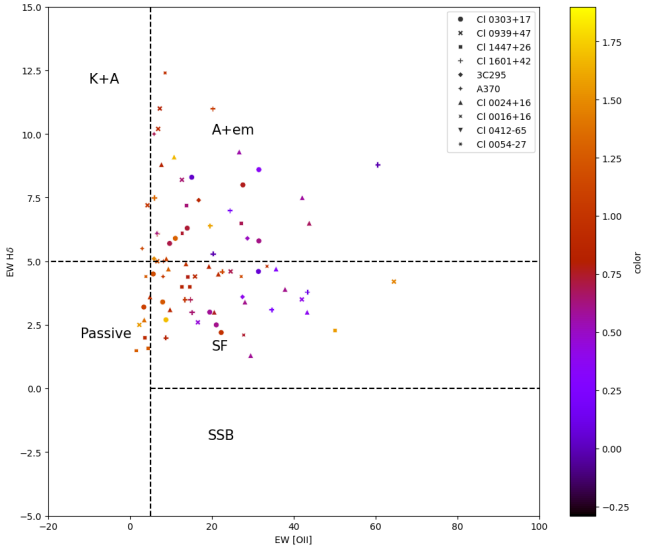

Figure 3. Figure made to replicate the first panel of the figure 2, this show the relation between the EW of $O[II]$ and EW of $H\delta$

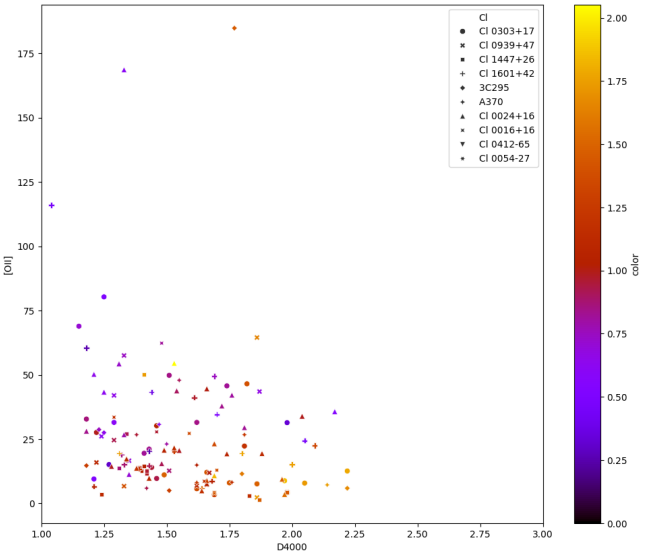

Figure 5. This figure show the relation between EW of $O[II]$ vs D4000

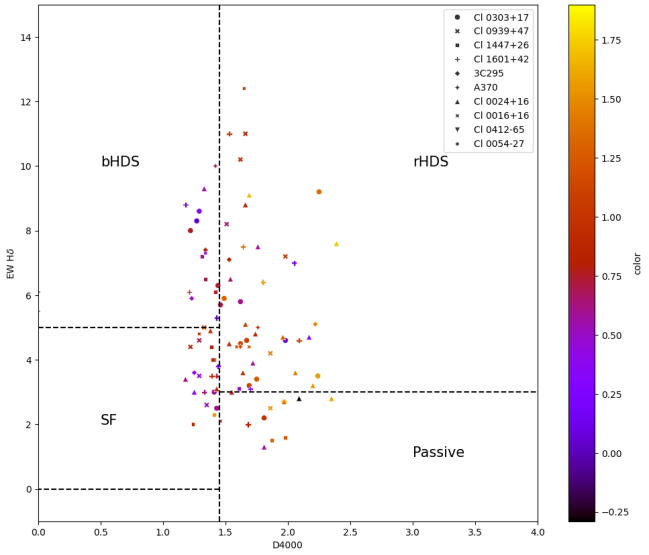

Figure 4. Figure made to replicate the second panel of the figure 2, this show the relation between the EW of $O[II]$ and EW of $H\delta$