

Photometric identification of emission line sources in the southern photometric local Universe survey (S-PLUS)

L. A. Gutiérrez-Soto,¹★ Second Author,² Third Author^{2,3} and Fourth Author³

¹Departamento de Astronomia, IAG, Universidade de São Paulo, Rua do Matao, 1226, 05509-900, São Paulo, Brazil

²Department, Institution, Street Address, City Postal Code, Country

³Another Department, Different Institution, Street Address, City Postal Code, Country

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ABSTRACT

The emission line objects are very important objects in astronomy because reflects different class of objects that evolved physical mechanics that given counts of formation stellar process, presences the gas, shocks, star-burst in galaxies, the finals stage of stars among others process. For this reason we have created a list of H α emitters selected from the S-PLUS data, which is mapping the southern hemisphere at relatively high latitudes. We implemented the (r - J0660) versus (r - i) color-color diagram for that task. We found 9,200 objects that exhibit um excess in emission in the J0660 which we have traduced as the presence of the H α emission line. In addition we have found that by combining the colors: (r - i) and (g - z) with unsupervised (clustering) machine learning it is possible separate our list of emitters in two sub-groups: one with intense blue continuum and another with intense red one.

Key words: keyword1 – keyword2 – keyword3

1 INTRODUCTION

The existence of an ionizing radiation field can lead to Balmer hydrogen emission lines. From the presence of the H Balmer lines in the optical spectra of some sources it is well known the possible presence of ionized gas. Many important astronomical objects involve the physics of photo-ionized gases and the interpretation of the emission-line spectra. Emission line objects as the H II regions allow us to study the star formation history of the far reaches of our Galaxy and of distant galaxies. Planetary nebulae let us to see the remaining envelope of dying stars. Star-burst galaxies and QSOs are one the most luminous objects and hence the most distant that can be observed. Their spectra can reveal details about of the first generation of star and the formation of heavy elements in the young universe. On the other hand, emission lines can also infer the presence or lack the accretion discs (Schwope et al. 2000; Ratti et al. 2012), the properties of single or double picked line can allow us to infer geometrical characteristics (Horne & Marsh 1986), the nature of donor stars in binary system (Steeghs & Casares 2002; van Spaandonk et al. 2010; Casares 2015) and the compact objects as black holes (Casares 2016).

Emission lines are also associated with stars in very early-type and/or very late evolutionary stage which are short phase. As already mentioned are also associated with binaries that experiencing mass transfer. These group of emission line stars includes young stellar (YSOs) and Herbig-Haro (HH) objects, post-asymptotic and some asymptotic giant branch (AGB), some red giant stars (RGB), Wolf-Rayet (WR) stars, supernova remnants, classical Be stars, active late-type dwarfs, interacting binary system like symbiotic stars

(SySt) and cataclysmic variables (CV). Most of these class of object are in-homogeneous and some contains many few identified members, for instance at the moment around 323 symbiotic system have been identified from which 257 belong to the Galaxy and ~66 are extra-galactic objects (Akras et al. 019a). The same occurs with PNe from witch around 3500 of them are been cataloged (Parker et al. 2016), this current number of PNe represents only about 15-30% of the estimated total of Galactic PNe (Frew, 2008; Jacoby et al., 2010) showing that a small fraction of the PNe have been cataloged. Many galaxies, in addition to harbor Planetary nebulae and H II regions, show characteristic nebular in their spectra. In most of these objects, the gas is photoionized by hot stars in the nucleus, which is thus much like giant H II region, or perhaps many H II regions. The galactic nucleus with very strongest emission lines of this type are often called blue compact galaxies, extragalactic H II regions, star forming or starburst galaxies (Osterbrock & Ferland 2006). There are also spiral galaxies that present emission lines.

In the past H surveys with modest spatial resolutions have been used to identified extended nebular emission to study supernova remnants, galaxy groups and star forming regions (Davies, Elliott Meaburn 1976). More recently, higher resolution surveys such as the INT Photometric H α survey (IPHAS; Drew et al. 2005; Barentsen et al. 2014) have focused in the study of compact emission line sources on the Galactic plane, typically with objects in different stage of stellar evolution. The Anglo-Australian Observatory UKS chmidt Telescope Supercosmos H α Survey (Parker et al. 2005) is anothe H α survey of the Southern Galactic Plane and Magellanic Cloud which has covered to b ~ 10-13° (verificar esto). Currently ongoing is the VST Photometric H α Survey of the Southern Galactic Plane and Bulge (VPHAS+; Drew et al. 2014) that will cover the Galactic bulge and plane in five filters.

* E-mail: gsoto.angel@gmail.com

Like VPHAS+, others ongoing surveys that are used to study the population of emission line objects are the The Javalambre Photometric Local Universe Survey (J-PLUS¹, Cenarro et al. 2018) and the Southern-Photometric Local Universe Survey (S-PLUS², Mendes de Oliveira et al. 2019) are providing observations of the Galactic halo covering both northern and southern celestial hemispheres in a systematic way with twin telescopes using the same set of multi-band filters. In addition to the H α filter, which is already vastly applied to systematically searching for H α emitters the telescopes offer 11 more filters. And more ambitious yet the JPAS survey that will the same area of J-PLUS in 56 narrow-band filters.

Traditionally, color-color diagrams based in H α filter are been used to identify H α emitters. The analysis the color-color diagram ($r - H\alpha$) versus ($r - i$) has resulted on the discovered of new emission line objects, for instance Witham et al. (2006, 2007) used the ($r - H\alpha$) versus ($r - i$) colour-colour diagram to find for new CV. On the other hand, Vink et al. (2008) reported the discovery of YSOs by using this same colour criteria. In this sense using this methodology a variety of classes of objects are been identified, which include symbiotic stars (Corradi et al. 2008; Corradi & Giannanco 2010; Corradi et al. 2011), early type emission line stars (Drew et al. 2008) and planetary nebulae (Viironen et al. 2009; Sabin et al. 2010). Recently, by using this same color diagram were also identified compact PN candidates in VPHAS+ catalog (Akras et al. 2019). And the same diagram in conjunction with new ones shows to be very efficient to find for PN candidates (Gutiérrez-Soto et al. 2020). In general terms, Witham et al. (2006) presented a methodology and first results in looking for emission line sources in narrow-band surveys.

In this work, we used S-PLUS observations of the southern hemisphere to search for objects with an excess of H α using automatic methods based on the ($r - H\alpha$) versus ($r - i$) color-color diagram we also used color criteria based in ($g - r$) and ($z - g$) in conjunction to unsupervised machine learning techniques to split the final list in those with blue and red continuum. The paper is organized as follows...

2 OBSERVATIONS

Particularly, we are implemented data from S-PLUS DR3 (ref) to carried out our study. S-PLUS is 12-band optical photometric survey, which are formed by using seven narrow-band and five broad-band like SDSS filters. The narrow-band set include the filter $J0660$ which detect the H α emission line. Figure 1 shows the Javalambre filter system (Marín-Franch et al. 2012) overlapping are the optical spectra of several class emission line objects on which it is possible to see that the H α line falls into the $J0660$ filter, except for the QSOs.

The actual data release contains about 60 millions of objects covering a total area of $\sim 8000 \text{ deg}^2$, at high Galactic latitudes ($> 30 \text{ deg}$) using a dedicated 0.83m robotic telescope, the T80-South (T80S), located at Cerro Tololo, Chile. S-PLUS will cover an additional 1300 deg^2 of the Galactic plane and bulge to enable Galactic studies. In this work, we focus on the aspects that are of particular interest to the second data release of the S-PLUS main survey. Additional information about S-PLUS can be found in Mendes de Oliveira et al. (2019).

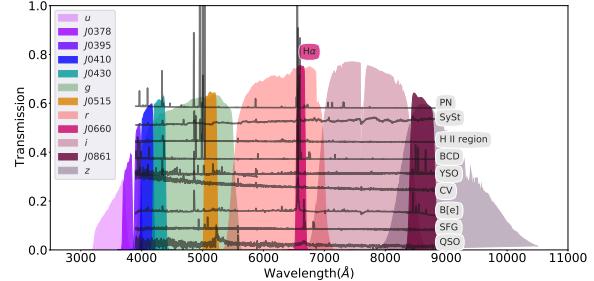


Figure 1. Transmission curves of the S-PLUS filters set. The narrow-band filter $J0660$ detects the H α emission line. Over-plotted are different classes of emission line objects, from upper to down PN, SySt ...

3 METHODOLOGY

We first constructed a sub-sample from all S-PLUS DR3 from which we applied an iterative and automatic technique to select objects with an excess of H α emission line, as we describe below:

3.1 Initial selection sample

The first step in our selection procedure consist in the following criteria to guarantee the quality of the observations of the objects:

- (i) The sources must have detection in the filters: r , i and $J0660$. To assure that we select object must have error minor or equal to 0.2 in each of three filter.
- (ii) Must have an r magnitude until $r = 21$.

3.2 Finding the main stellar locus and selecting the H α emitters

Once the initial cut were made, we proceed to select the objects with an excess of H α which is represent relatively high value of the filter $J0660$ in comparison with r -band filter. For that we first divided our sub-sample in four magnitude bins using the r -band magnitudes. The bins have the follow distribution:

- 1 bin- objects with magnitude in the r -band $r < 16$
- 2 bin- objects with magnitude in the r -band $16 \leq r < 18$
- 3 bin- objects with magnitude in the r -band $18 \leq r < 20$
- 4 bin- objects with magnitude in the r -band $20 \leq r < 21$

To select the $r - J0660$ colour Wevers et al. (2017) presented a catalogue of point-sources H α emission objects identified in IPHAS.

To select the emission lines we used the same method created and implemented by Witham et al. (2008) its possible to do that because the S-PLUS has similar filters that the IPHAS project, which are r , $J0660$ and i . This technique was used by Scaringi et al. (2013) to identify blue objects with excess of H α and after that Wevers et al. (2017) also applied this methodology to create catalogue of candidate H α emission showing a high effectiveness. Applying the selection criteria to selecting H α emitters. We used the same procedure in Wevers et al. (2017). The objects with H α excess meet the condition:

$$(r - J0660)_{\text{obs}} - (r - J0660)_{\text{fit}} \geq C \times \sqrt{\sigma_s^2 - \sigma_{\text{phot}}^2} \quad (1)$$

where σ_s is the root mean squared value of the residuals around the fit and σ_{phot} is the error on the observed $(r - J0660)$ colour

Firts see an approximation of the 4σ cut away from the original fit.

In Figure 2 is illustrate the selection process. The black line represent the fit

¹ <https://www.j-plus.es>

² <http://www.splus.iag.usp.br>

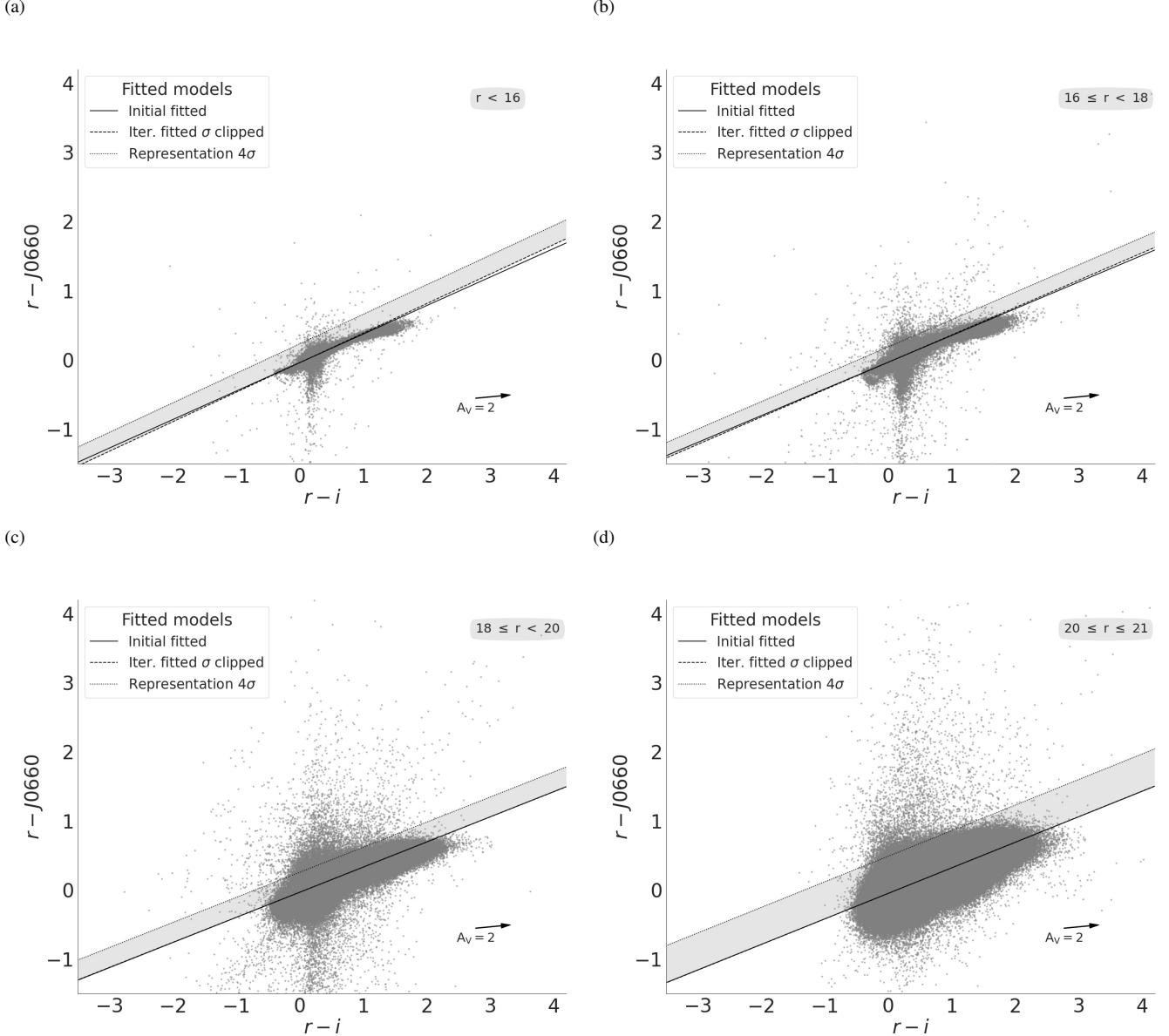


Figure 2. An illustration of the selection criteria used to identify strong emission-line objects via colour-colour plots. The data shown here are all from the S-PLUS DR3. The data are split up into four magnitude bins, as shown in the four panels. Objects with H α excess should be located near the top of the colour-colour plots. The thin red lines illustrate the original least-squares fit to all the data (grey points). The thin blue lines represent the final fits to the upper locus of points obtained by applying an iterative σ -clipping technique to the initial fit. The actual cuts used to select H α emitters are shown by the thick dashed lines. If the cut was based on the initial (final) fit, it is shown in red (blue). Objects selected as H emitters must be located above the cut and are shown as large triangles. Note that the cut lines shown here are only approximate, as the actual selection criterion also considers the errors on each individual data point. This explains, for example, why an object in the bottom right-hand panel is not selected despite clearly lying above the cut line.

3.3 Maths

3.4 Figures and tables

4 RESULTS

5 CONCLUSIONS

We have found a important sample of emission line objects.

ACKNOWLEDGEMENTS

DATA AVAILABILITY

REFERENCES

- Akras S., Guzman-Ramirez L., Gonçalves D. R., 2019, *MNRAS*, **488**, 3238
- Akras S., Guzman-Ramirez L., Leal-Ferreira M., Ramos-Larios G., 2019a, *ApJS*, **240**, 21
- Almeida-Fernandes F., et al., 2021, arXiv e-prints, p. [arXiv:2104.00020](https://arxiv.org/abs/2104.00020)
- Barentsen G., et al., 2014, *MNRAS*, **444**, 3230
- Casares J., 2015, *ApJ*, **808**, 80
- Casares J., 2016, *ApJ*, **822**, 99

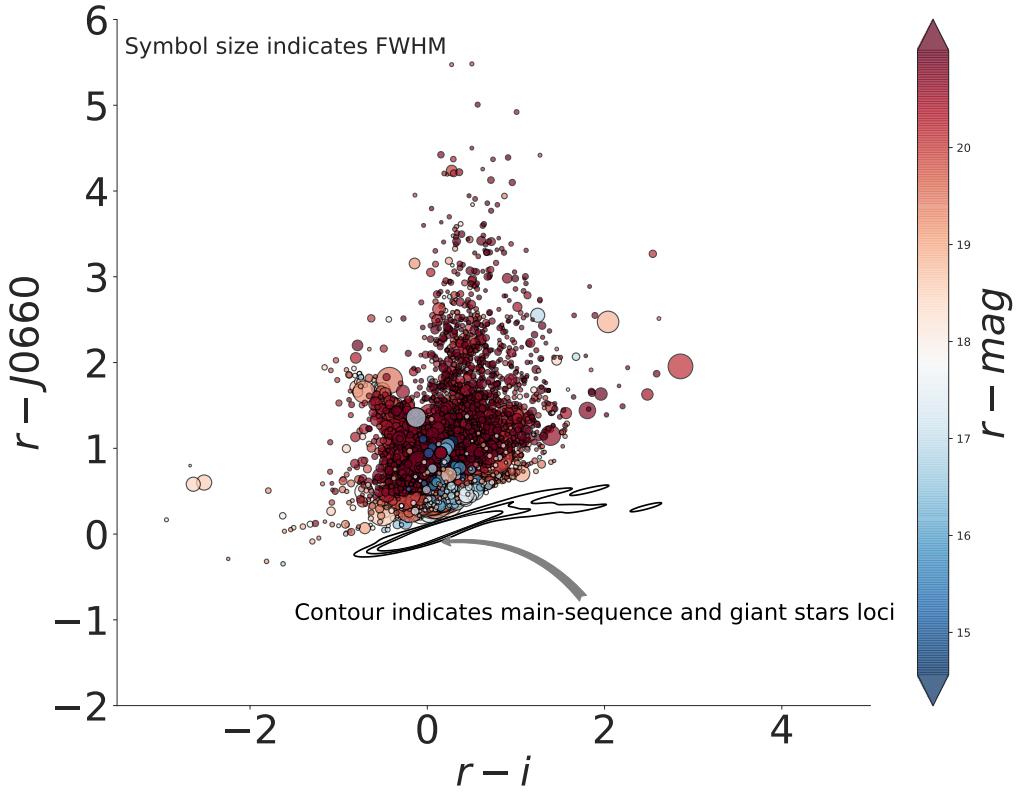


Figure 3. Colour-colour diagram with all the emission line objects selected from S-PLUS DR3. Size of the symbols represent the measured FWHM assuming a Gaussian core (for more detail see Almeida-Fernandes et al. 2021). Colored bar is the magnitude values in the r-band. The contours represent the synthetic main-sequence and giant stars loci from the library of stellar spectral energy distributions of Pickles (1998).

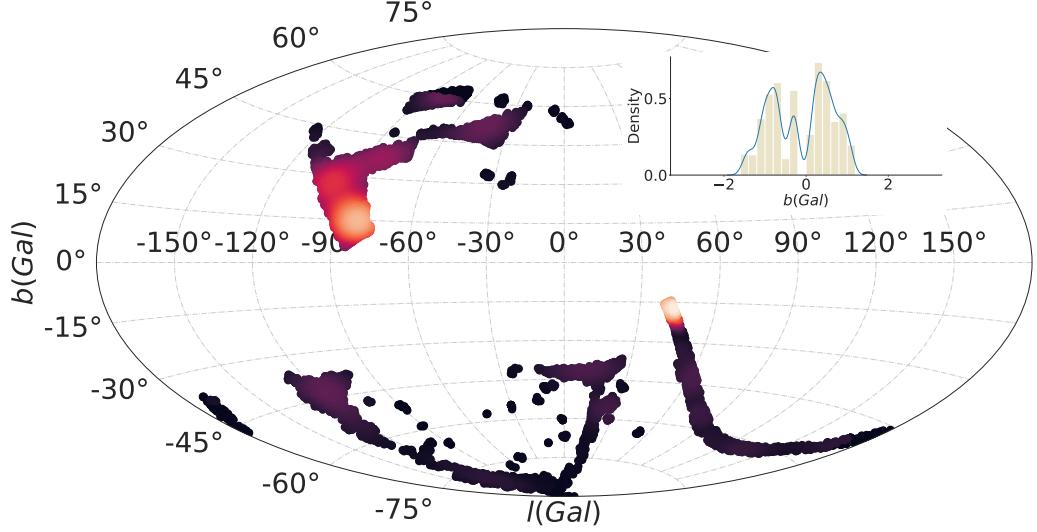
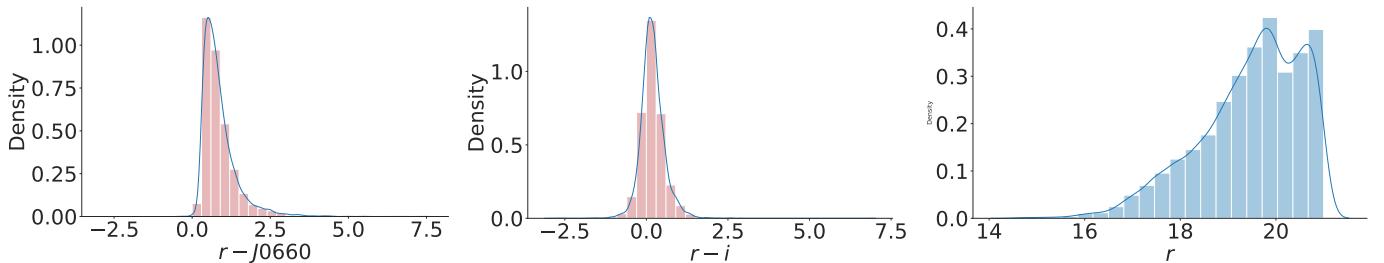
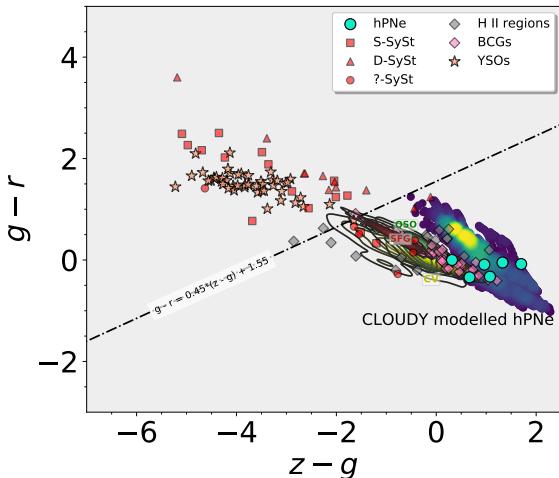
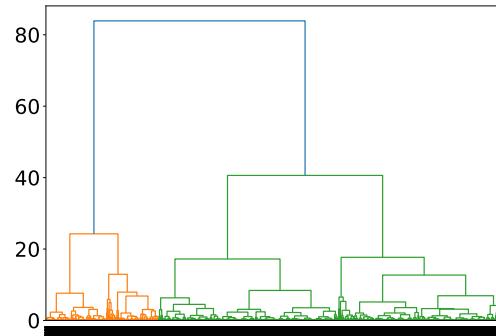
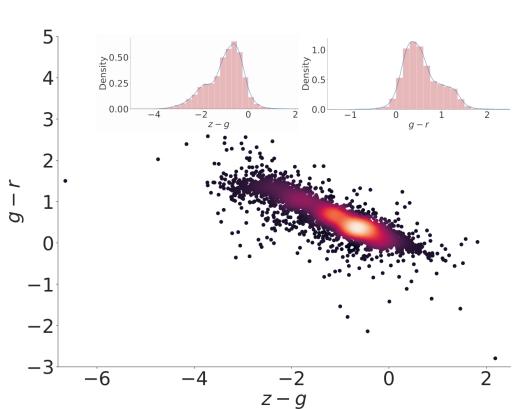
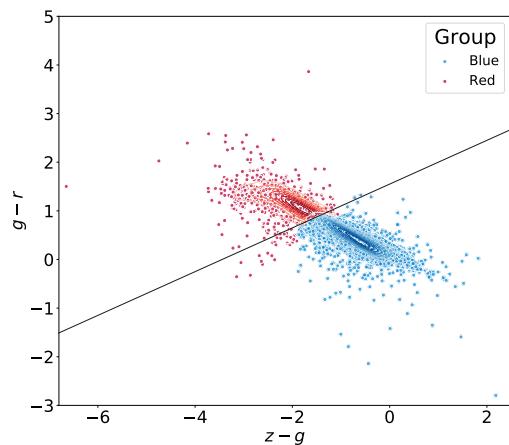


Figure 4. The distribution of H emitters in Galactic longitude and latitude. The emitters are shown as red points if brighter than $r = 18$, and black points if fainter. The S-PLUS direct fields are shown by green squares (offset fields are not shown). All emitters are shown here, including those with flagged with ‘c’ in Table 1.

**Figure 5.** Emission lines selected...**Figure 6.** Classifying...**Figure 8.** Costomer dendrogram...**Figure 7.** Classifying...**Figure 9.** Costomer dendrogram...

- Cenarro A. J., et al., 2018, preprint, ([arXiv:1804.02667](https://arxiv.org/abs/1804.02667))
 Corradi R. L. M., Giannanco C., 2010, *A&A*, **520**, A99
 Corradi R. L. M., et al., 2008, *A&A*, **480**, 409
 Corradi R. L. M., Sabin L., Munari U., Cetrulo G., Englaro A., Angeloni R., Greimel R., Mampaso A., 2011, *A&A*, **529**, A56
 Drew J. E., et al., 2005, *MNRAS*, **362**, 753
 Drew J. E., Greimel R., Irwin M. J., Sale S. E., 2008, *MNRAS*, **386**, 1761
 Drew J. E., et al., 2014, *MNRAS*, **440**, 2036
 Gutiérrez-Soto L. A., et al., 2020, *A&A*, **633**, A123
 Horne K., Marsh T. R., 1986, *MNRAS*, **218**, 761
 Mendes de Oliveira C., et al., 2019, *MNRAS*, **489**, 241

- Osterbrock D. E., Ferland G. J., 2006, *Astrophysics Of Gas Nebulae and Active Galactic Nuclei*. Sausalito: University Science Books, <https://books.google.com.br/books?id=HgfrkDjBD98C>
 Parker Q. A., Bojić I. S., Frew D. J., 2016, in *Journal of Physics Conference Series*. p. 032008 ([arXiv:1603.07042](https://arxiv.org/abs/1603.07042)), doi:10.1088/1742-6596/728/3/032008
 Pickles A. J., 1998, *PASP*, **110**, 863
 Ratti E. M., Steeghs D. T. H., Jonker P. G., Torres M. A. P., Bassa C. G., Verbunt F., 2012, *MNRAS*, **420**, 75

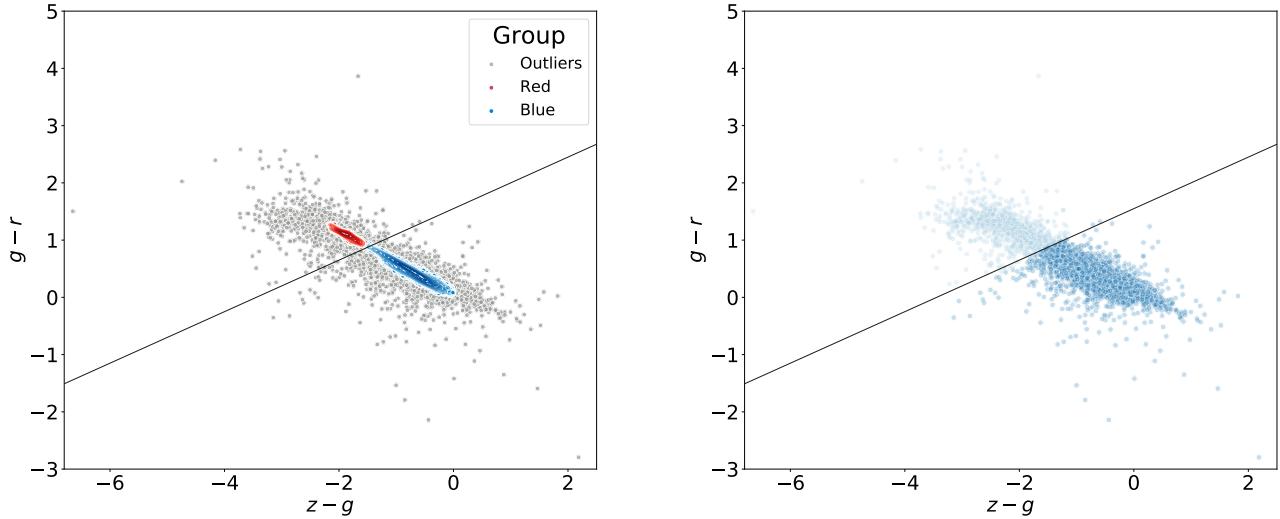


Figure 10. New color-color diagram to separate the blue objects from the red ones.

- Sabin L., Zijlstra A. A., Wareing C., Corradi R. L. M., Mampaso A., Viironen K., Wright N. J., Parker Q. A., 2010, [Publ. Astron. Soc. Australia](#), **27**, 166
 Scaringi S., Groot P. J., Verbeek K., Greiss S., Knigge C., Körding E., 2013, [MNRAS](#), **428**, 2207
 Schwope A. D., Catalán M. S., Beuermann K., Metzner A., Smith R. C., Steeghs D., 2000, [MNRAS](#), **313**, 533
 Steeghs D., Casares J., 2002, [ApJ](#), **568**, 273
 Viironen K., et al., 2009, [A&A](#), **502**, 113
 Vink J. S., Drew J. E., Steeghs D., Wright N. J., Martin E. L., Gänsicke B. T., Greimel R., Drake J., 2008, [MNRAS](#), **387**, 308
 Wevers T., et al., 2017, [MNRAS](#), **466**, 163
 Witham A. R., et al., 2006, [MNRAS](#), **369**, 581
 Witham A. R., et al., 2007, [MNRAS](#), **382**, 1158
 Witham A. R., Knigge C., Drew J. E., Greimel R., Steeghs D., Gänsicke B. T., Groot P. J., Mampaso A., 2008, [MNRAS](#), **384**, 1277
 van Spaandonk L., Steeghs D., Marsh T. R., Torres M. A. P., 2010, [MNRAS](#), **401**, 1857

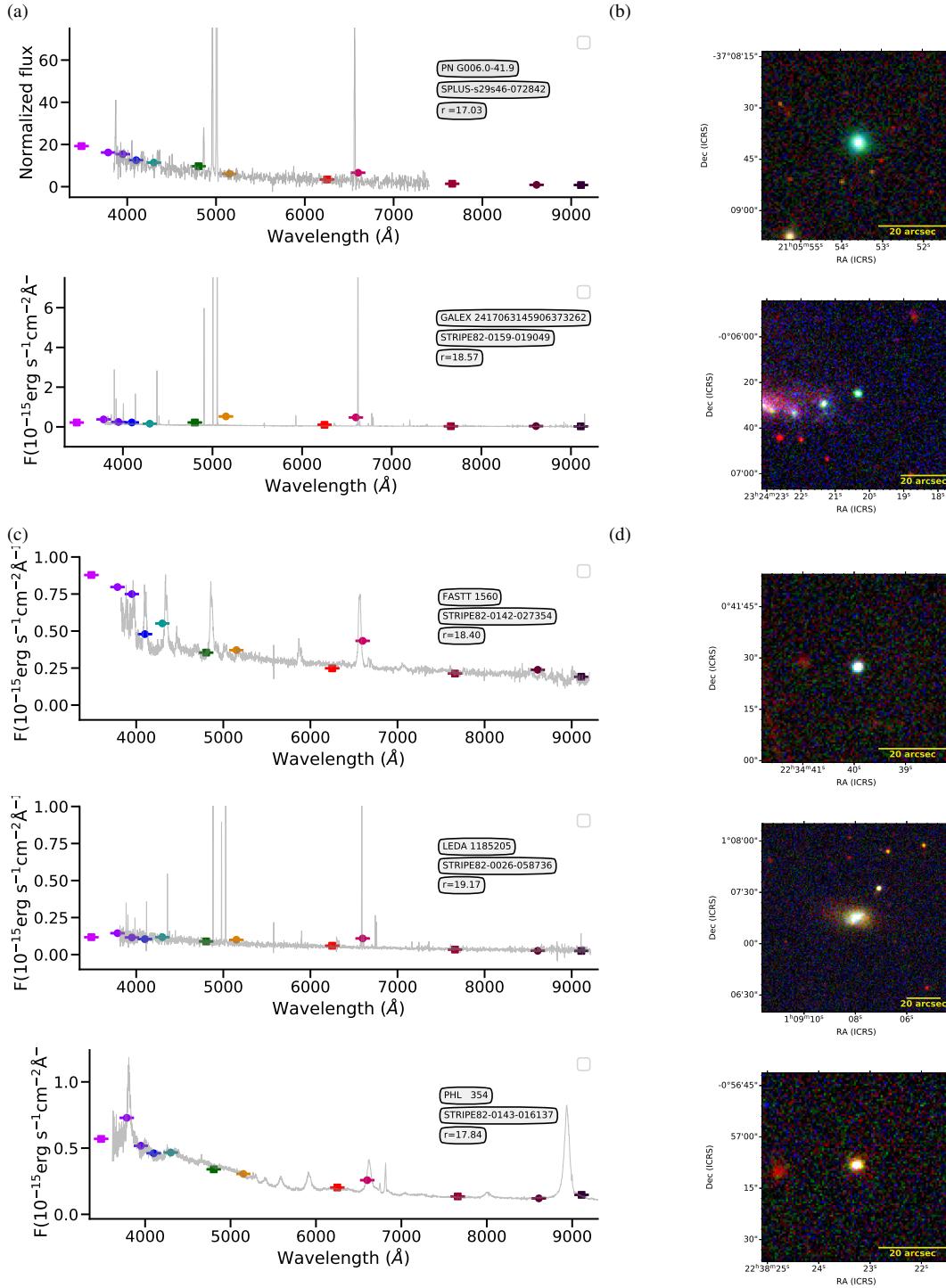
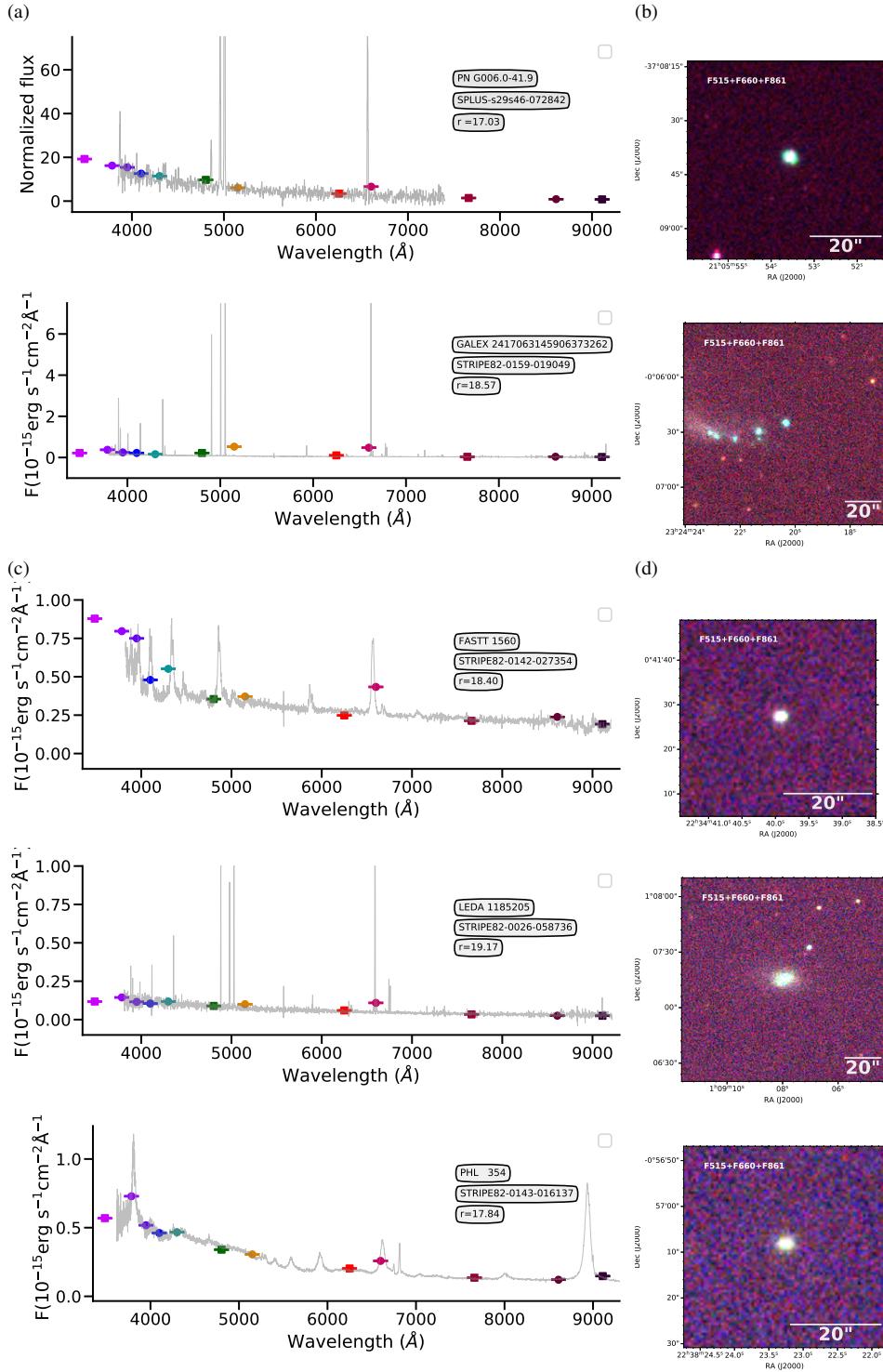


Figure 11. Spectra of the known objects select with our algorithm

**Figure 12.** Spectra of the known objects select with our algorithm

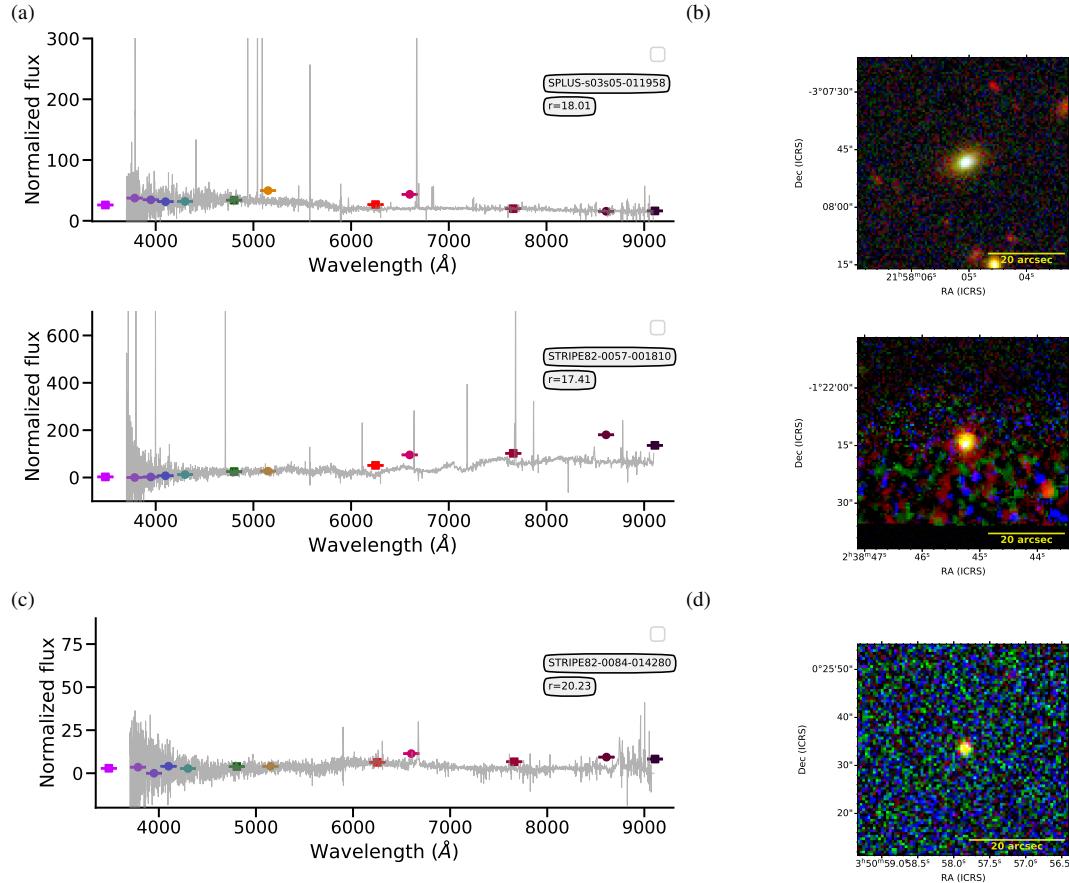
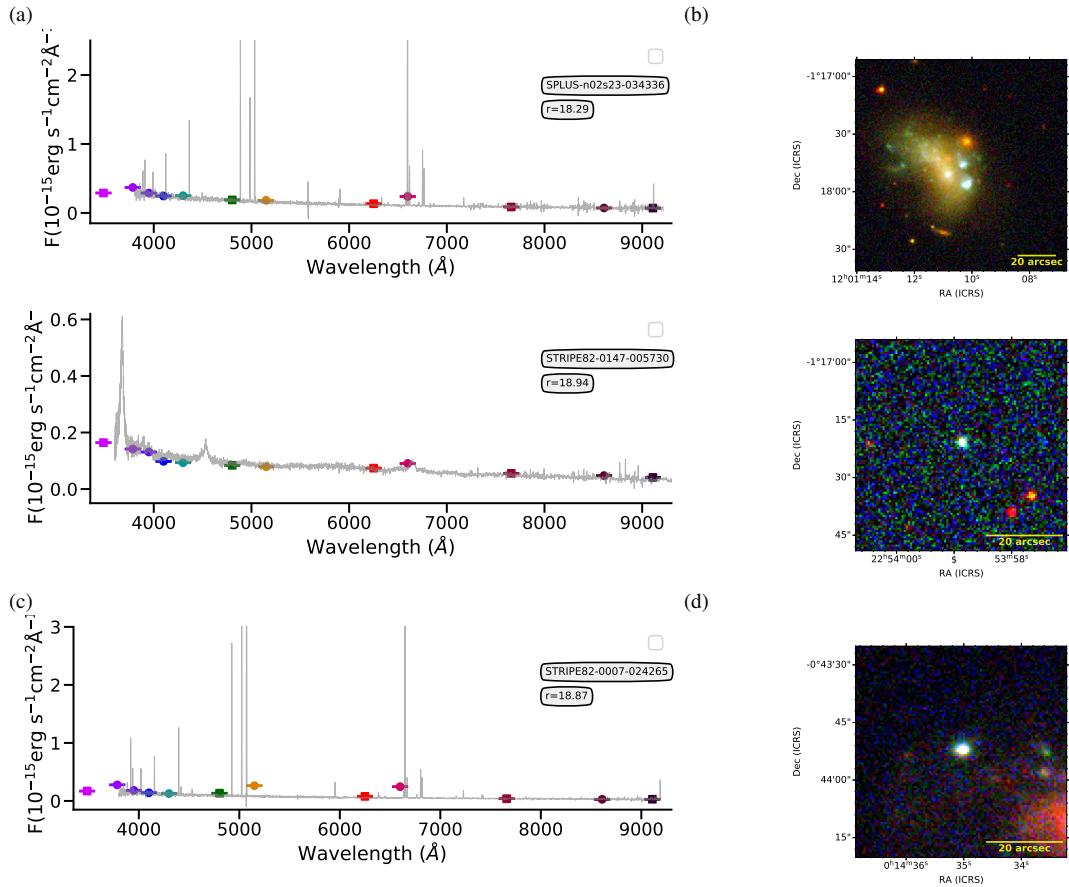


Figure 13. Spectra of the Lamost

**Figure 14.** Spectra of the SDSS

APPENDIX A: SOME EXTRA MATERIAL

Table A1: Simbad sources.

Type	RA	DEC	Group
Star	0.4968921619628843	-29.3112214428821	Blue
QSO	0.6279554824066291	0.8331230804411939	Blue
CIG	0.6982473212090481	-0.373204977953541	-
Star	1.286523747867553	-30.851162659705377	Red
QSO	1.658281373282977	-0.6156060790712984	-
QSO	1.791687271704504	0.8914261244525057	Blue
QSO	2.038930048182944	0.8264638152844974	-
Galaxy	2.328179105177891	-0.6519420575037337	Blue
QSO	2.666987531261032	-29.740921877458867	Blue
Star	2.7030486187917577	-29.791327943410987	Red
Galaxy	2.7306881758399904	-30.739852073510534	Blue
QSO	3.1199364195988752	-31.04443153319788	Blue
Seyfert 1	3.3638162881857334	0.875614770300196	Blue
EmG	3.6199743565125737	-0.7455029176005269	Blue
Star	3.7333117402685474	0.3176892728434901	Blue
QSO	3.860510825587982	0.3037236200425542	Blue
QSO	3.898110576074378	0.8989176411595012	Blue
Galaxy	4.117681731557023	1.1338942388667368	Blue
QSO	4.174451424491121	-31.44905004903269	Blue
QSO	4.380258459418438	-0.8164386494043362	Blue
StarburstG	4.416543859611166	0.5062627804218517	Blue
QSO	4.474256625814649	0.8493703288672522	-
QSO	4.801640792188885	0.0554916881824542	Blue
QSO	4.917646791908225	-0.9099503373848068	Blue
QSO	4.958578954314056	-0.6779700699260857	-
QSO	5.657902318221463	0.0886788337120439	Blue
EmObj	6.280815147745145	0.3125654118801338	Blue
Seyfert 1	6.333011956389121	0.525479973176037	Blue
Galaxy	6.974318052697582	-0.9667199252402	Blue
Galaxy	7.320040644293336	-1.0064266381068807	Blue
QSO	7.416749471161749	1.0913027872498264	Blue
AGN	7.464354807727703	0.7000037288417243	Red
QSO	7.823701945596341	0.2847385223835051	-
Unknown	7.906256073243137	-29.47091029710251	Blue
Galaxy	7.961265608895669	-28.92685732854085	Blue
Galaxy	7.969005194202078	-29.592587811984853	Blue
QSO	8.035561688713287	-0.8843461346218345	Blue
QSO	8.144241522878199	-0.2658504803749659	Blue
Galaxy	8.144555784075553	-42.66955742286215	Blue
QSO	8.178072183921541	0.5197450140043085	Blue
Galaxy	8.477954545229275	-29.936853996206867	Blue
AGN	8.821276175970617	-42.088597877208215	Red
QSO	8.941080203860544	0.3849934246315855	Blue
AGN	9.10579672267925	-0.4853030603908992	Red
Galaxy	9.160164736675396	-32.5790767643802	Blue
QSO	9.308785545285224	-0.9344374247364892	-
QSO	9.342361420176386	-0.1946009608261733	Blue
EmObj	9.4213937498701	0.5555554739851708	Blue
QSO	9.747289111980264	-0.714454350224955	Blue
BlueCompG	9.876175084523542	1.3391251468348433	Blue
FIR	9.89493608957293	0.8602458369384121	Blue
FIR	9.89493608957293	0.8602458369384121	Blue
Galaxy	10.565064891250165	-32.21589781391012	Blue
QSO	10.682789961127495	1.283933341653539	Blue
Galaxy	10.84118200857788	-33.31747498120273	Blue
CataclyV*	10.896509451927638	-0.6248809118328724	Blue
QSO	11.065875879315966	-0.717518646194803	-

Table A1: –continued

Type	RA	DEC	Group
QSO	11.434797546075147	-31.95811304109312	Blue
Galaxy	11.609577132522691	-1.237997024045413	Blue
QSO	12.112387692202818	-34.22741726899439	Blue
QSO	12.32716144605164	1.2191920530524625	Blue
Seyfert 1	12.955915679701484	0.5649407893753414	Blue
QSO	12.98183382570476	-26.962028288894874	Blue
PartofG	12.99884215031428	-0.489110520414667	Blue
Galaxy	13.215039941128667	-27.32576442209961	Blue
QSO	13.43231563480846	1.363190953245345	Blue
Galaxy	13.564745864622545	-1.0822213962934328	Blue
EmG	13.667158618404784	-32.011715009609304	Blue
QSO	13.683104869130515	-30.51502373758133	Blue
QSO	13.883649917774902	-31.260498014964096	Blue
Galaxy	13.922147889436662	-0.9418439978440708	Blue
UV	13.96395390310537	-30.945219315827195	Blue
Star	13.97147997409192	-28.91591361083288	Blue
Galaxy	13.97214405926334	-33.65042770377668	Blue
QSO	14.04137683954713	-31.36906110248861	Blue
QSO	14.162698397718229	-31.96627152132016	Blue
Galaxy	14.30251703197933	-0.3660285011264472	Blue
QSO	14.668422466041417	-30.03336355079838	Blue
GinCl	14.767074131559603	1.0011685238164214	Blue
Galaxy	14.806556179582149	-34.32102363637064	Blue
Galaxy	14.90035476839902	-30.344152784983983	Red
QSO	14.953354509073169	-1.3181152771969302	Blue
QSO	14.971706058633467	-39.53259262490825	Blue
GinCl	14.99825027722706	-0.8658482234469952	Red
Star	15.018499579744676	-33.65902649700721	Blue
Unknown	15.041426928322918	-32.02530671766837	Blue
Galaxy	15.067378592944028	-34.96127978456718	Blue
Galaxy	15.340682319480235	-0.050506307384101	Blue
QSO	15.561054131595537	-30.13160407774772	Blue
Seyfert 1	15.625098200551925	-0.5352093094283729	Blue
GinCl	15.632402188184084	1.3433615405781432	Blue
QSO	15.901621012754958	-0.9191165595206996	Blue
QSO	16.05775922175709	-1.264431931617225	Blue
QSO	16.580131544341818	0.8064950808416276	Red
AGN	16.722666519750696	-32.72831437441763	Blue
AGN	16.74555738353547	1.0772660282004771	Red
QSO	16.77312563028888	0.1024885367041135	Blue
LSB G	16.943641045715655	1.0639605673889347	Blue
BCIG	16.952571807415076	0.7482365853106138	Red
GinCl	17.256603326003162	1.3781935749384482	Blue
GinCl	17.256603326003162	1.3781935749384482	Blue
QSO	17.28164156677598	0.1138851962867193	Blue
HII G	17.28310789223492	1.12097992550518	Blue
QSO	17.32733457723796	0.90539845012828	Blue
QSO	17.35815775854618	-0.6275003706886488	Blue
EmG	17.558224802220092	-30.4123526694582	Blue
EmG	17.829265187901036	-30.00504645851688	Blue
QSO	17.86813658313074	0.0286974483465913	Blue
Galaxy	18.052665880956955	-33.94196296129968	Red
QSO	18.12729657912228	0.2449304176402998	Blue
Star	18.24172293238632	0.9769381424794108	Blue
Galaxy	18.304286168638374	-32.436079929066175	Blue
LSB G	18.418416425105388	0.8774947989896621	-
Seyfert 1	18.509796280365048	-0.7974488232759221	Blue
QSO	18.521860772867413	-31.150780875277498	Blue
Galaxy	18.65047255772875	-32.644711309144114	Blue

Table A1: –continued

Type	RA	DEC	Group
HII G	18.882863357422373	-0.8622960010814391	Blue
Galaxy	18.887732613726776	-0.8596562230501371	Blue
HII G	18.89077699675322	-0.8587455347938298	Blue
HII G	18.89077699675322	-0.8587455347938298	Blue
QSO	18.92575064401607	0.3834537397700357	Blue
Galaxy	19.15999417596711	-32.92752270653384	Blue
Galaxy	19.417523978322624	-33.07795844094275	Blue
Galaxy	19.485155478290817	-30.44051337374056	Blue
Galaxy	19.523785998210776	-33.05253885507861	Blue
QSO	19.57552004108609	0.2487480482840988	Blue
Seyfert 1	19.623433609428748	0.7637166618270906	Blue
Galaxy	19.70478983753148	-33.33696862040094	Blue
EmG	19.97594947041034	-34.24999710931423	Blue
Galaxy	20.04161862712166	-33.23630428587631	Blue
QSO	20.29473653398262	-0.8436434200227299	Blue
Star	20.46746328553068	-33.937725015878605	Red
HII G	20.5577706221541	0.9587780047376696	Blue
Galaxy	20.571187870663927	-34.04488260918208	Blue
QSO	20.611445353426262	0.0577366753714225	Blue
QSO	20.75741214062869	0.0565525553589094	Blue
Galaxy	20.9619712625909	-29.19623005164965	Blue
GinCl	20.97812192371461	0.2823414770093598	Blue
Galaxy	20.984790111603804	0.2086134560133449	Blue
Galaxy	20.989463788795724	-33.80208215339882	Blue
Galaxy	21.02387513879961	0.984703935513288	-
QSO	21.067433955055776	-32.20603385094096	Blue
Galaxy	21.12566535772545	-33.645961451411665	Red
QSO	21.26913199118856	-32.28740231179497	Blue
EmG	21.3593347521788	-30.742435844021443	Blue
Galaxy	21.45538057489708	-28.162097768619763	-
Galaxy	21.612608797820563	0.9810769034670448	Blue
Galaxy	21.657201901148973	-34.58716304788603	Blue
HII G	21.69378980441009	-0.6457451930656755	Blue
GinCl	21.99710751467788	-29.086653030427502	Blue
GinCl	22.36059472065752	-1.1997118023036937	Red
QSO	22.642393025135533	-0.3518162354106257	Blue
Galaxy	22.84101560993188	-33.101715461339545	Blue
Galaxy	22.940224488235035	-32.94910608953699	Blue
Galaxy	22.94684892850287	-33.18197514224045	Blue
Galaxy	23.22263487815018	-33.4451915146773	Blue
low-mass*	23.268819219724307	0.0655786809704273	Red
Galaxy	23.50191659447233	-1.0664487372750466	Blue
Galaxy	23.716830840704777	-0.6486782673628352	Blue
QSO	23.753457358462345	-0.6817256241073724	Blue
Seyfert 1	23.823057046706182	-0.3275050653110525	Blue
Galaxy	23.8798401596094	-31.614165292143262	Blue
QSO	24.257111717644538	-1.3497465276851617	Blue
QSO	24.3725070057774	-32.12103455786598	Blue
QSO	24.655329021886622	0.4717925959967649	Blue
QSO	24.962782843879992	0.4272217892643302	Blue
Seyfert 1	25.07109927100977	-0.8341590148622415	Blue
QSO	25.35682525075279	0.1321647769641862	Red
QSO	25.60303358518956	-32.07047314351019	Blue
QSO	25.764557663482428	-29.88188949191848	Blue
EmG	25.82619164196742	-34.206232083806285	Red
QSO	26.83799104587179	-0.7514735524191466	Red
QSO	26.913386215352126	-28.883097657544933	Blue
QSO	26.9133952038632	-28.88312791748778	Blue
Galaxy	27.02603800602231	-0.4782147764500624	Blue

Table A1: –continued

Type	RA	DEC	Group
QSO	27.05101817682357	0.0315348188803727	Blue
Star	27.18405084268284	-27.936387555535745	Blue
Galaxy	27.320953851728728	-32.74253858762196	Blue
QSO	27.33969542295298	-0.5391525524002503	Blue
Galaxy	28.165578926823763	1.0994164155371124	Red
Galaxy	28.224387503312013	1.2043017183289575	Red
Seyfert 1	28.24067423260991	-28.810501310105817	Blue
QSO	28.38271202195532	0.3813754396509161	Blue
HII G	28.502069390098665	-0.752764335854246	Blue
QSO	28.53861595248377	0.4459129033998668	Blue
QSO	28.545594305017943	-28.870735753209058	Blue
QSO	28.564494450701485	-28.8819264781154	Blue
EmG	28.66852283441473	-0.1121248724133715	Blue
Galaxy	28.86195614598901	0.1043810217993179	Blue
Galaxy	28.871127003162204	-0.6575329793880781	Blue
RRLyr	29.55730413894375	1.028736096882655	Blue
QSO	29.63394027051608	-30.284120909894927	Blue
QSO	29.63398878244968	-30.28409277206394	Blue
QSO	29.70926847240945	-30.077239118059776	-
QSO	29.89784479360552	0.0670730705671857	Blue
QSO	30.105854148548683	0.4879895823228443	Red
QSO	30.22926062206253	-29.59069575111854	Blue
GinGroup	30.31036584086444	-31.728583712955565	Blue
QSO	30.31471271654344	0.5264157435180954	Blue
QSO	30.500247645814035	-0.155885605135301	Blue
QSO	31.14774462904211	-45.99000661095606	Blue
Galaxy	31.25347770425113	1.401015050803151	Blue
Galaxy	31.83471909535146	-33.03174281330757	-
QSO	32.01870359151427	-0.0063899756832095	Blue
QSO	32.11278143734105	-0.8688706450161886	Blue
QSO	32.34166379711758	-0.9153964683450352	Blue
Galaxy	33.10437995801359	-33.083042512325804	-
Galaxy	33.60091505746918	-33.24777452929094	Blue
Galaxy	33.69844878804215	-32.709786589316614	Blue
QSO	33.87092614743144	-0.8874609989930496	Blue
Galaxy	34.006750737249284	-31.61438842877632	Blue
Galaxy	34.05728735762157	-30.84910309956719	Blue
QSO	34.07162177605453	-1.17963313592842	Blue
QSO	34.543835265892945	-1.0297901208560476	Blue
CataclyV*	34.866661573073486	-30.76277662129932	Blue
EmG	35.3022376237971	-30.43306611004649	Blue
Galaxy	35.82052533020276	-1.0137779997035794	Blue
Seyfert 1	36.07140219729569	0.10724100290268	-
Galaxy	36.21975140764737	-34.10951561423316	Blue
Galaxy	36.37884288953809	-0.8353138394540365	Blue
PartofG	36.61785108970139	1.1604400554801353	Blue
PartofG	36.61785108970139	1.1604400554801353	Blue
Galaxy	36.69277213609015	-43.59156135457005	Blue
EmG	36.81029852296449	1.0934074799976583	Blue
Galaxy	36.83039522616293	1.025612852538597	Blue
QSO	36.90951623742346	-31.607345845404307	Blue
QSO	36.99250641431996	0.0404421118141437	-
Galaxy	37.06050668375983	-39.267782818411305	Blue
PartofG	37.1197026918213	-1.1496158836885042	Blue
Star	37.43891173256027	0.1489862508458985	Blue
Seyfert 1	37.47787637713116	-30.599559376424764	Blue
Star	37.48751137869475	-1.0089856734353149	Red
Galaxy	37.54069701310436	-31.60505123369656	Blue
Seyfert 1	37.58720416243717	0.2321681675793745	Blue

Table A1: –continued

Type	RA	DEC	Group
Galaxy	38.03891271958179	-1.3861949894293877	Red
Galaxy	38.07534927116573	-33.84528829588545	Blue
QSO	38.12763748929023	-1.2817952492366265	Blue
Galaxy	38.174504835656805	-39.295229245873685	Blue
Galaxy	38.20293944460951	0.8607798584028256	Blue
Nova	38.34423535712647	0.8498264300321089	Blue
EmG	38.39285833594685	-39.04470809996566	Blue
QSO	38.39735766972906	-1.1290537121536242	Blue
Galaxy	39.11980508074	-0.9749932035748634	Blue
QSO	39.14871940890983	-0.5342706372644691	-
QSO	40.24643683967374	0.7627476177593495	Blue
QSO	40.6454475160122	-1.0644227483678184	Blue
HII	40.69556506354039	0.0239358351857076	Blue
HII	40.89837979736232	1.3771938278420643	Blue
HII	40.90704549503712	1.3729265625996037	Blue
HII	40.92809118446975	1.3595621460159046	Blue
HII	40.933458965510255	1.3779211213547329	Blue
Galaxy	41.52198188668681	-33.08317001603085	Blue
Star	41.60058125535593	-0.4980253582007756	Blue
QSO	41.60311859466317	-0.5045181639339942	Blue
PartofG	41.60593375574607	-0.5027112363938046	Blue
Star	41.61070793418088	-0.5000978872359795	Blue
QSO	42.75267977777988	0.2853735115843281	Blue
Galaxy	43.06969129708544	0.2947725157476631	Blue
QSO	43.21668023139433	-0.3698979850578264	Blue
Seyfert 1	43.60887244004112	-0.6896473847720612	Blue
RadioG	43.98850261320957	0.692640180601257	Red
QSO	44.030210339218165	1.1774555299992029	Blue
HII	44.10549886585857	0.5748223254603584	Blue
Galaxy	44.118458575759135	0.6078355659352473	Blue
Galaxy	44.439740352809245	-33.482079149106816	Red
Seyfert 1	44.79324003091252	-0.3777292200872463	Blue
Galaxy	45.79093859633274	0.2271602138922271	-
Galaxy	46.05196517556931	-1.1927199888695097	Red
Galaxy	46.07402391239703	-0.8254163698523541	Blue
Seyfert 1	46.144829680398814	-0.4751996068898478	Blue
QSO	46.20769411378219	-0.1370507568661265	Blue
Blue	46.2415646756668	0.9538832761700016	Blue
Galaxy	46.32601371119922	-0.1594812724372881	Blue
QSO	46.55298185202796	1.3659244829765935	Blue
AGN	46.6217332236032	-33.89231237580181	Blue
Galaxy	46.62637094367816	-0.1063532167324183	Red
Galaxy	46.81501686424852	0.7312750476021798	Blue
QSO	46.98979992986573	0.120017369478221	Blue
QSO	47.87373270347458	-0.2837361426333072	Blue
WD*	47.87885012806618	-31.880860044582445	Blue
GinGroup	48.202558396796846	-31.48630904526674	Blue
Galaxy	48.24315359852245	-0.0815656430783389	Blue
Galaxy	48.48367671208701	-31.470164460703632	Blue
Galaxy	48.61771428658176	0.7519402356960914	Blue
Galaxy	49.06378553118447	-31.209241913161897	Blue
Galaxy	49.0750504981236	-0.5069279648561904	Blue
Galaxy	49.21104988541157	-33.30106752208543	Blue
Galaxy	49.21108348383686	-33.30109956831036	Blue
Galaxy	49.62107027321726	-0.0112548928671764	Blue
QSO	49.68820265523018	-0.3125867996899615	Blue
QSO	49.905357996326025	-0.4447129467729893	Blue
QSO Candidate	50.68707745560916	0.7450965554947673	Blue
GinPair	51.26729795433997	-36.92773995131392	Blue

Table A1: –continued

Type	RA	DEC	Group
Galaxy	51.3044429528618	-36.369356180322086	Blue
GICl	51.48028596578508	-32.88302604889567	Blue
QSO	53.10952432881614	-1.1905549158813071	Blue
QSO	53.10958810574174	-1.190642242028551	Blue
Seyfert 2	53.292001605589874	0.1469919509442148	Red
QSO	53.74365145217437	-0.1288517115468432	Blue
QSO	54.58960430404596	0.5184971700047292	Blue
BLLac	54.67234367033864	-35.52621813852562	Blue
BLLac	54.67235585673245	-35.52616012986378	Blue
QSO	54.86439460038415	-34.61862342769125	Blue
HMXB	55.05160899500496	-35.62780439037955	Blue
EmG	55.08289490156473	1.0585242193939064	Blue
QSO	55.09580981936138	-35.26861884407053	Blue
AGN	55.21032155384233	-35.439371817285185	Blue
GinGroup	55.38562960618687	-34.88861116743838	Blue
Seyfert 1	55.69883615683876	1.1591704436722594	Blue
Star	55.76939354280558	0.4200849545421101	Blue
Galaxy	56.01948427011065	-38.13665123007838	Red
QSO	56.03437204036832	-0.5182824235374773	Blue
Galaxy	56.11555619710486	-0.4611633605478731	Red
QSO	56.32088432677072	-0.2638128432166242	Blue
GinCl	56.43910392669589	-36.34612610981142	Blue
Seyfert 2	56.51053562993339	-0.0162825970895807	Red
GinCl	56.84143331660593	-32.85143564003734	Red
LSB G	57.28305368748847	1.162003553131273	Blue
LSB G	57.28697520415392	1.1628501269812663	Blue
EB*	57.830647615852506	0.5379309203257563	Red
Galaxy	58.760643529078	-38.594508054321246	Red
Candidate WD*	58.81671653823677	-37.49575812066213	-
Star	58.91021078569528	0.4763724886809515	Blue
Galaxy	59.023230308727214	-49.47798028782121	Blue
Galaxy	59.21160650977977	-0.2430266735645456	Red
Galaxy	59.342101075938615	-37.03168069989505	Blue
Galaxy	59.384437936839966	-0.0132210920265977	Blue
Galaxy	59.76629933224044	1.359321839400579	Blue
Galaxy	59.76629933224044	1.359321839400579	Blue
EmG	60.12243387703378	-49.03011512394491	Blue
AGN Candidate	60.19197563815276	-34.40769068554132	Blue
Galaxy	60.22136110841383	-35.23783495731069	Blue
QSO	60.794009739694005	-34.94910807950281	Blue
Galaxy	60.98645768730256	-38.23292063597632	Blue
Galaxy	61.17143615831319	-34.96550088599031	Blue
Galaxy	61.33498273596544	-36.81638793661925	Blue
Galaxy	61.33500967007201	-36.81633617582762	Blue
Star	61.366561383475336	-38.18946988054663	Blue
QSO	62.877144254160285	-33.89197020875841	Blue
Galaxy	62.9931906508685	-37.97889641219351	Blue
GinGroup	63.22209217387362	-31.30837649675762	Blue
Galaxy	63.24997813266718	-38.32846190144912	Blue
Candidate WD*	65.02824515881092	-32.85555378019325	-
Galaxy	65.23682931827716	-32.84522864914376	-
Galaxy	66.49750313852422	-43.27294370064416	Blue
Galaxy	66.63573911050027	-41.03239942176444	Blue
Galaxy	66.68476952384738	-42.261434192503216	Blue
Galaxy	66.68695800025141	-42.09458791504701	Blue
Galaxy	66.68714006680887	-42.97731957959581	Blue
Galaxy	66.92599861968759	-42.63898741357326	Blue
Galaxy	67.11963551092221	-43.24142208891916	Blue
CataclyV*	67.91485862835738	-30.25392017250568	Blue

Table A1: –continued

Type	RA	DEC	Group
Galaxy	68.18465267691735	-32.02224565575888	Red
Galaxy	68.29080626237631	-43.77044714232464	Blue
Galaxy	68.83252077391391	-42.20328938270354	Blue
Galaxy	68.92411946177829	-47.878850433212456	Blue
Galaxy	69.29655862698584	-46.68521526277068	Blue
Galaxy	69.3258708273691	-32.36953198691898	Blue
Candidate RRLyr	69.3959956471664	-44.34132589285379	Blue
Galaxy	69.59805855964451	-33.08572978600444	Blue
Galaxy	69.86435708444397	-42.98661407860815	Blue
Galaxy	71.43743287875098	-38.64685520996582	Blue
Galaxy	72.09605095751637	-44.88268692292141	Blue
Galaxy	72.5097904389203	-47.47749473675231	Blue
Galaxy	72.95356751115321	-46.6268828264031	Blue
Star	73.12966757047025	-44.18451458170195	Blue
Galaxy	73.33107814604597	-32.775789122825564	Blue
Seyfert 1	73.67932821336544	-48.22227714319606	Blue
SN	73.71975877176362	-37.32095899536727	Blue
GinPair	73.75077658898451	-37.25984603891258	Blue
Galaxy	73.8604762285104	-30.5912705964922	Blue
Galaxy	149.25704125132305	-26.49125060546518	Blue
Galaxy	149.27756719714128	-19.11835403915	Blue
Galaxy	149.34776368562885	-7.214281786532718	Blue
Galaxy	149.65458057970807	-47.0834549455375	Blue
Galaxy	149.94509282349162	-19.46665636988552	Blue
RRLyr	149.9619948222865	-38.50635457434919	Blue
Galaxy	150.02266834541734	-38.791294342178766	Blue
GinGroup	150.02430652185143	-31.553009436144805	Red
Galaxy	150.20467895584443	-30.544964090090623	Blue
Galaxy	150.24614431502653	3.46430477903397	Blue
LSB G	150.28779184781126	-19.441570601534337	Blue
Galaxy	150.39201389787095	-7.882130572619383	Blue
Star	150.54887788731048	-19.426983577758755	Blue
QSO	150.56596957389203	-0.1821573352244082	Blue
Galaxy	150.6057355105053	1.3268834909408125	Blue
GinGroup	150.6613029459264	-45.49829273146848	Red
HII	150.7159322821982	-26.15665080119176	Blue
BlueSG*	150.7278728767585	-26.149887286064303	Blue
HII	150.7346337031606	-26.14957887246477	Blue
HII	150.7477842615568	-26.14623490714214	Blue
HII	150.74781937989135	-26.146224890426577	Blue
AGN Candidate	150.75873809239062	-26.149651149010563	Blue
Galaxy	150.7687797537192	-19.82725437530812	Blue
Galaxy	150.81269716967137	-5.9091034216348906	Blue
BlueSG*	150.8235011834385	-26.167151664932163	Blue
QSO	150.9246975604601	-15.135802684821307	Blue
Galaxy	150.96798139179825	-31.41348352964001	Blue
Galaxy	151.0827329372396	-44.425732478471055	Blue
Galaxy	151.28199229547042	-19.85840135525412	Blue
Galaxy	151.32213147773072	1.639363549720132	Blue
Galaxy	151.36878333879326	-38.12502118371568	Blue
QSO	151.41616300935794	4.154090690739466	Blue
RRLyr	151.45414160514633	-25.69641389129041	Blue
Galaxy	151.57165594109023	-6.5743506042744455	Blue
Galaxy	151.59250580663203	-26.83255786101104	Blue
GinGroup	151.63078465018722	-32.04330204360609	Red
HII G	151.63902577766424	-29.93550371363763	Blue
X	151.64125084856218	-29.93654830008841	Blue
Galaxy	151.79613569006344	-19.06794716771129	Blue
Galaxy	151.863516303881	-31.9241460721396	Blue

Table A1: –continued

Type	RA	DEC	Group
EB*	151.89099681523237	-30.32206607484225	Blue
CataclyV*	151.894380024813	-20.292330786813192	Blue
CataclyV*	151.894397417937	-20.29234976425421	Blue
Galaxy	152.04483687127907	-33.517284694292314	Red
Galaxy	152.09172791204222	-14.810029537324146	Blue
Galaxy	152.12536783724758	-26.359156873827526	Blue
GinGroup	152.30756133387325	-43.00250347539357	Red
Galaxy	152.4594322607411	-35.462014678338335	Blue
Galaxy	152.49472827763157	-20.516514889740176	Blue
Galaxy	152.71002820639652	-30.423435447476333	Blue
Galaxy	152.71586515599603	-35.00780396726373	Blue
EmG	152.79126867563463	-20.870559523696024	Blue
Galaxy	152.80618764806343	-29.45774182077688	Blue
EB*	153.0033682767619	-36.95700736727947	Red
Galaxy	153.0140154103735	-32.46855221932521	Blue
Star	153.1982442378898	-47.56420453243028	Blue
Galaxy	153.24854544281163	-34.935163258478006	Blue
EmG	153.42462857062154	-34.85508456238106	Blue
Galaxy	153.475351986868	-34.73973403487098	Blue
Galaxy	153.60648341878957	-30.708348670780456	Blue
Galaxy	153.61172675715056	-23.484691315285414	Blue
EmG	153.6739002429698	-44.85392470634676	Blue
EmG	153.68898998838594	-34.059173447990155	Red
Galaxy	153.7005254616359	-43.53042741275906	Blue
Galaxy	153.738831902119	-43.61921964149586	Red
EmG	153.93560354915405	-20.295547464050404	Red
Star	153.99297118154576	-47.969198865203865	Blue
Seyfert 2	154.07782142695768	-33.56382825508867	Red
EmG	154.3048015423118	-21.066758849089943	Blue
Galaxy	154.52385478212994	-31.646946374240247	Blue
QSO	154.59067560656675	-21.66881849744636	Blue
Candidate CV*	154.72293935897585	-40.11213368993416	Blue
Galaxy	154.755114203685	-37.67199013139984	Blue
HII G	154.8382251423767	-22.14259842833651	Blue
HII G	154.83865197802905	-22.1433030664676	Blue
EmG	154.92214062464984	-25.814701960679475	Blue
Galaxy	155.11884791676323	-23.47924382987377	Blue
Galaxy	155.13632707464745	-23.448329902566297	Blue
Candidate CV*	155.1756706372574	-33.83399007627319	Blue
Star	155.18046602174618	-20.798507707460985	Blue
EmG	155.20376267846092	-23.46585528316608	Red
Galaxy	155.28862213986295	-32.86107252975438	Blue
Galaxy	155.3376370346406	-21.607687357095795	Blue
Galaxy	155.50926414134003	-39.87941443605516	Blue
AGN Candidate	155.66642433355923	-30.49182167237173	Blue
Galaxy	155.74810048793466	-42.82746318744498	Blue
GinGroup	155.75973043034236	-39.16661255574749	Blue
EmG	155.91777428751132	-35.825975288268005	Red
EmG	155.91778896569792	-35.825982705450976	Red
Galaxy	156.08946269809243	-43.917108333597646	Blue
Seyfert 2	156.1309531167453	-23.55266399516915	Red
EB*	156.30609371925286	-35.67130335611048	Blue
Galaxy	156.53085826350642	-24.555606178694944	Blue
GinCl	156.5904324509266	-29.19937594593883	Blue
CataclyV*	156.77427199442948	-43.72812711312928	Blue
Galaxy	156.83444311537312	-23.8054382317716	Blue
SN	156.9597791681585	-43.90576634134269	Red
SN	156.95987056162335	-43.90578498083468	Red
X	156.96365603572264	-43.89957006382954	Blue

Table A1: –continued

Type	RA	DEC	Group
IG	156.96371293405733	-43.903895415957074	Red
IG	156.96375808362262	-43.90381928622784	Red
X	156.9655292631724	-43.90377424167152	Blue
X	156.96556060694496	-43.90370677872753	Blue
HII	156.97034612111383	-43.90320661166486	Blue
HII	156.9703863167105	-43.90311040224713	Blue
HII	156.9703863167105	-43.90311040224713	Blue
AGN	157.17900380093772	-31.0382414041846	Red
CataclyV*	157.1827613944662	-16.21759565677345	Blue
RRLyr	157.24187820994632	-30.14102445233805	Blue
GinGroup	157.25296711210694	-40.08275785582687	Blue
EmG	157.29613556479967	-30.342418658284583	Blue
Galaxy	157.6274499803631	-36.47975718945754	Blue
Galaxy	157.6274682004481	-36.479748605745336	Blue
GinGroup	157.7403937388915	-34.70791610390661	Blue
Galaxy	157.75073627506603	-40.17847373737768	Red
EmG	157.8745742217274	-32.71308133498473	Blue
Seyfert 2	157.96713209517503	-34.853619773852564	Red
Galaxy	157.98905881760817	-41.81141143980291	Blue
GinCl	158.24673600744714	-27.54358314016397	Blue
Galaxy	158.32248528920698	-43.07862690646628	Blue
GinGroup	158.5031268315751	-35.282679860025794	Blue
GinGroup	158.50313124725002	-35.28257740972755	Blue
GinCl	158.61142286949843	-27.50109937658653	Blue
EmG	158.66144673587488	-28.583352366148148	Blue
EmG	158.72747432181612	-20.548791249883188	Blue
Galaxy	158.74382525909093	-40.91202846007671	Blue
GinCl	158.76197984814078	-29.506601635883555	Blue
EmG	158.78217874356557	-27.991310579496265	Blue
EmG	158.82799732327132	-36.87848044358572	Blue
GinCl	158.84031456075968	-27.695706429361035	Blue
Galaxy	158.88207558555908	-30.83334548440517	Blue
Galaxy	158.89231455964594	-44.57808865211405	Blue
Galaxy	159.01109904047328	-24.906702733164057	Blue
Galaxy	159.02890003630893	-28.295841627615104	Blue
EmG	159.09213938275613	-25.37651306213532	Blue
GinCl	159.12642175053503	-27.90110338436836	Blue
GinCl	159.1895107330749	-28.167422472389195	Blue
HII G	159.22859031523527	-26.240560203605337	Blue
Galaxy	159.23368459218906	-26.903779869033656	Blue
GinCl	159.25764732775707	-28.3671309867131	Blue
Galaxy	159.2685358307238	-31.365924306516472	Blue
EmG	159.30363493989583	-27.683956942836808	Blue
GinCl	159.33289005555525	-28.238872359967427	Blue
Galaxy	159.3425230747454	-27.544963483924352	Blue
MIR	159.47885157911082	-24.42906249628565	Red
IG	159.52433508127856	-25.09446001133432	Blue
HII	159.55988117082038	-38.09040420988944	Blue
GinCl	159.6195197846552	-28.51528044835931	Blue
Galaxy	159.62643334547482	-23.54853332522397	Blue
EmG	159.63924688805704	-27.737156832802217	Blue
EmG	159.67291882499617	-25.592286212707226	Blue
Galaxy	159.73852013561282	-20.04493226744504	Blue
Galaxy	159.80424882724313	-20.636809607995904	Blue
EmG	159.8583643577597	-23.75467363684896	Blue
CataclyV*	159.9998687263755	-47.023971746909325	Blue
CataclyV*	159.9998687263755	-47.023971746909325	Blue
IG	160.12922543109804	-29.26958257985193	Blue
EmG	160.24459285878757	-21.78454117893259	Red

Table A1: –continued

Type	RA	DEC	Group
Galaxy	160.2588369311913	-30.794483697929085	Blue
RRLyr	160.26609841870317	-34.18983231402896	Blue
Seyfert 1	160.31322227492322	-21.02303660410036	Blue
Galaxy	160.36546852844964	-31.780316177810057	Blue
Galaxy	160.36546852844964	-31.780316177810057	Blue
Galaxy	160.3964705972055	-37.46929287562097	Blue
Galaxy	160.41429810549982	-27.777270815267524	Blue
IG	160.52757582075228	-22.105582546244552	Blue
Galaxy	160.581242806875	-36.320460681862535	Blue
Galaxy	160.65827140741635	-23.935679330514013	Blue
EmG	160.8791677599853	-30.77221131800008	Blue
EmG	160.8791677599853	-30.77221131800008	Blue
Galaxy	161.0404678812419	-20.81930794850729	Blue
IG	161.25085749109647	-22.15227748471596	Blue
Galaxy	161.394795164108	-24.28370035395108	Blue
EmG	161.57129581271013	-28.42321162775831	Blue
Galaxy	161.62610118824867	-30.321619430632296	Blue
EmG	161.6602141109401	-36.353314928386006	Blue
Galaxy	161.69807525519326	-23.32773309331226	Blue
Star	161.84960610101908	-41.99703765702019	Blue
EmG	161.9348517270216	-20.96356099589758	Blue
HII G	161.9671272252362	-20.08148354643084	Blue
HII G	161.96719252130313	-20.081516627814896	Blue
Radio	162.09779631183395	-25.16210701557664	Red
Galaxy	162.10543718248564	-21.850134134896635	Blue
SN	162.10604102445896	-25.16002800864644	Red
Galaxy	162.17634873432067	-32.6437113818742	Blue
Galaxy	162.44532875160957	-28.67697878087972	Blue
Galaxy	162.6651817194897	-18.542879179509185	Red
Galaxy	162.75154034827315	-20.23925755451401	Blue
Galaxy	162.75753741468907	-28.33790302356877	Blue
Galaxy	162.86415841998232	-19.6936241482243	Blue
Galaxy	162.95445605894844	-21.88819830344904	Blue
Galaxy	163.13766385805908	-23.149877815633783	Blue
Candidate SN*	163.6701579306735	-39.22193302241251	Blue
Galaxy	163.84009494937516	-23.424249462174128	Blue
Galaxy	163.8401072399262	-23.42423690390457	Blue
Galaxy	164.15997638632015	-20.78672855473099	Blue
Galaxy	164.20211131014338	-19.833433033461127	Blue
Galaxy	164.26801410841605	-33.15564025093645	Red
Galaxy	164.3079665625576	-47.66979296726016	Red
Galaxy	164.40217291905444	-35.5043965318927	Blue
Galaxy	164.68435964333	-19.158632283113736	Blue
CataclyV*	164.7459588212315	-31.60947413507693	Blue
Galaxy	164.79107984418525	-27.9998147852096	Blue
Candidate RRLyr	165.46357641452303	-46.88458955272901	Blue
PM*	165.49154204855074	-23.790923666401383	Blue
CataclyV*	165.90237819943616	-21.629405520763783	Blue
GinPair	165.9423233893419	-23.245019645533223	Blue
UV	165.99608941173514	-18.77670167044572	Blue
IG	166.8045693341223	-19.81867010242588	Blue
EmG	166.8297173445012	-19.55555857294575	Blue
EmG	166.8297504542546	-19.55541255601515	Blue
IG	166.9493403358462	-20.02226907187982	Blue
Galaxy	167.71070433927775	-21.97451931840779	Blue
Galaxy	167.73846916883397	-21.9481524929022	Blue
Galaxy	168.4623790067395	-21.44856383511027	Blue
EmG	168.67501934507874	-23.727739165310048	Blue
QSO	169.1815896684582	-17.194855188675877	Blue

Table A1: –continued

Type	RA	DEC	Group
Galaxy	169.31254592914237	-18.973439165695304	-
Galaxy	169.39609173910995	-22.751735680185	Red
EB*	170.73371282684457	-24.47777875977149	Blue
Galaxy	172.39240723207388	-24.777518733865605	Blue
AGN	172.868588307185	-19.98410951303733	Blue
Candidate CV*	173.0792138701351	-21.661910741435744	-
Galaxy	173.60216658108814	1.1543503176286625	Blue
Star	174.05290786239414	0.0819136002772735	Blue
EmG	174.15304036864492	0.8172611304944561	Blue
Galaxy	174.15329276947446	0.8154915247975553	Blue
CataclyV*	174.34240673564196	1.816372111607291	Blue
Candidate WD*	174.45820819375535	-20.1269725960127	Blue
Galaxy	174.726375893798	-1.6428088681911317	Blue
RRLyr	174.73164786697532	-21.19658104320207	Blue
Galaxy	174.75578476142175	1.3382478314723678	Blue
QSO	174.7681233226218	-1.4402891840929772	Blue
Galaxy	175.3959908754587	-18.19457670541773	Blue
HII G	175.44030773451672	-1.901335843741868	Blue
Galaxy	175.53808352236646	-18.16909360257072	Red
PartofG	175.55137074064442	0.3342699608891871	Blue
Galaxy	175.5609804603061	-2.53146576861475	Blue
RRLyr	175.65814831106258	-20.45605247119997	Blue
Seyfert 1	175.712294430323	1.516178983683592	Blue
QSO	175.8722683259682	-2.0554055350002094	-
QSO	175.8722971552406	-2.0555300405054746	-
Galaxy	175.94213914323512	-1.2761143494938	-
Galaxy	175.9475214240503	1.5149705815849348	Blue
RRLyr	176.03675655570706	1.4057473653603636	Blue
EmG	176.21230592350696	1.72354409641951	Blue
Candidate WD*	176.23234742536548	-17.944273338719373	Blue
Galaxy	176.28348295379152	-0.9883941397936244	Blue
Galaxy	176.29884651458195	-0.90069812354485	Red
Galaxy	176.3135693424706	-20.746519437466933	Blue
Galaxy	176.35960159169613	0.0041113183584209	Blue
Galaxy	176.50187966637736	0.1769481366071585	Red
Galaxy	176.53216927105808	-0.4579777695914926	Blue
QSO	176.6796613966468	1.1885571745316508	Blue
EmG	176.79778025270713	-0.4516064637217532	Blue
Seyfert 1	177.07589066324908	-1.6399572049281346	Blue
Galaxy	177.07645388246996	-1.6418060467883486	Blue
QSO	177.41500197480892	1.773741489322032	Blue
HII G	177.59908479508587	-0.5282934246500881	Blue
GinCl	177.65124196182416	-0.5685118230038877	Blue
Galaxy	177.65163991073865	-0.5673845606788012	Blue
QSO	177.70537423275803	-0.8636364611502556	Blue
Galaxy	177.8042441388274	-22.890342062408017	Red
Galaxy	177.87268901124386	-0.0593301076444981	Red
Galaxy	177.88734562043996	-2.372761176366136	Blue
Seyfert 1	177.88896201644386	-2.3727022231183543	Blue
Galaxy	178.07031354806253	1.3909661333218957	Red
EmG	178.07224961864256	-2.8840749153908187	Blue
GinGroup	178.11507669366992	-20.10390480837867	Blue
Seyfert 1	178.15543681764203	-2.4692788013971625	Blue
HII G	178.15697510920216	-2.468564555740332	Blue
Seyfert 1	178.19800706306424	-0.668799198555378	Blue
Seyfert 1	178.19803381207012	-0.6688280067157996	Blue
Galaxy	178.30862939134568	-3.409047236958316	Blue
Galaxy	178.36942473779808	-3.230237358905925	Blue
QSO	178.4393258721732	-2.722344158881375	Blue

Table A1: –continued

Type	RA	DEC	Group
GinPair	178.55129628495746	0.136777756088964	Blue
Galaxy	178.7357899597813	0.1848611250308225	-
Galaxy	178.79661341326374	0.4848658484267525	Blue
Galaxy	178.79873915999408	0.4902688388336615	Blue
Galaxy	179.29940481773815	-2.686921090064285	Blue
Galaxy	179.3012016296504	-2.686482916082229	Blue
Galaxy	179.36682377284328	-19.624040211696983	Blue
Galaxy	179.40451295413072	-2.027027964558633	Blue
Galaxy	179.4045305314517	-2.026996683135112	Blue
QSO	179.4500979791226	1.722464633451602	Blue
QSO	179.47609913312544	-1.6377672684560611	-
Galaxy	179.48620454609028	-20.565663973239875	Blue
Galaxy	179.53333868601857	-17.893384995930617	Blue
Galaxy	179.59916114110445	-19.517546281041724	Blue
EmG	179.74240913634958	-19.02992833661004	Blue
Galaxy	179.8478669187984	-1.7228572218896734	Blue
SN	179.87055152576207	-19.25634139982329	Blue
Galaxy	180.08253579679277	-20.802092442909533	Blue
Galaxy	180.08415872887417	-1.1066153905837022	Blue
QSO	180.0906960738449	-2.72525835885637	Blue
PartofG	180.1095757612321	-1.1019334954271696	Blue
QSO	180.15952618608105	1.2129112212203663	Blue
QSO	180.1873094362587	-18.995686347147792	Blue
Galaxy	180.1978076966742	-3.420035887658516	Blue
HI	180.1988428326189	-0.02340688109002	Blue
GinPair	180.29522824339665	-1.2972657148586302	Blue
QSO	180.34692325828544	0.474578784794196	Blue
Galaxy	180.3769799367477	-23.31854795335849	Blue
Cl*	180.46003622778284	-18.870100269365853	Blue
HMXB	180.46006145306487	-18.87215768996868	Blue
HII	180.4603613485204	-18.86737026502464	Blue
Radio	180.46306050492643	-18.87467270267031	Blue
Radio	180.4635139848257	-18.8625819554819	Blue
Cl*	180.46623334670275	-18.874490272565943	Blue
HII	180.4678191428082	-18.87206620305753	Blue
HII	180.47066639368427	-18.86764989585912	Red
HII	180.4707539538797	-18.869071106666347	Blue
HII	180.4729992541083	-18.86226786400905	Blue
Radio	180.47322728801936	-18.88582768843834	Red
Cl*	180.47726007541223	-18.868760846298173	Blue
PartofG	180.4772638227824	-18.88438817240201	Blue
MolCld	180.4806328363593	-18.880180958610644	Blue
HII	180.48142237348915	-18.873019641423856	Blue
MolCld	180.481983657978	-18.870542013361973	Blue
Radio	180.482084992802	-18.8785472820429	Blue
HII	180.4845311148264	-18.87743596736424	Blue
EB*	180.52810919054875	-23.051671253398336	Blue
Galaxy	180.70997875542824	0.3254128494396162	Red
WD*	181.31583811226784	-2.706276551980267	Blue
Galaxy	181.6572228298745	-15.28811460859046	Blue
Galaxy	181.71110394382373	-14.21553394093172	Blue
QSO	181.7517098625927	1.1990112046487067	Blue
QSO	182.33562177580043	-0.4820361729402547	Blue
QSO	182.545072752764	-0.6527062334835679	Blue
Galaxy	182.6100536766531	-0.0870043020990194	Blue
Seyfert 1	182.68163468989783	-0.6523719250391294	Red
EmG	182.7543746779469	1.3402916186010196	Blue
Seyfert 1	183.0613723384793	0.0723961267201827	Blue
Galaxy	183.06624544494187	-0.5647749352872001	Blue

Table A1: –continued

Type	RA	DEC	Group
EB*	183.24909669974548	1.823100765666048	Red
Galaxy	183.27052753312853	-0.6503293355092394	Red
Galaxy	183.41164031698213	-1.2934275172309344	Blue
Galaxy	183.4506660746881	-14.52772420569266	Blue
QSO	183.6469096827458	-1.990114618560348	Blue
QSO	183.81343790615867	-1.5946745490378629	Blue
Galaxy	183.91446236872125	-2.363112482714665	Blue
Galaxy	184.0314339047394	-2.4326620218980715	Blue
Galaxy	184.5002257605925	0.4326907734274652	-
Galaxy	184.52944788519463	-3.1080109031254355	Red
Galaxy	184.5794111776165	-14.20553320828172	Blue
Galaxy	184.579419031614	-14.205547557474516	Blue
QSO	184.73251321873693	2.0005938638657152	Blue
QSO	184.9269721119905	-0.3059539785935566	Blue
HII G	184.97137095309444	1.77334461639504	Blue
Galaxy	185.0155358422371	1.1089971952641655	Red
LSB G	185.04802604861416	1.9586348136308644	Blue
Galaxy	185.11998162334305	-1.8391750369277204	Blue
Galaxy	185.12660572308948	-0.4508268628498345	-
QSO	185.37906214223312	1.124474721489336	Blue
Star	185.39336391937871	-14.964030135530916	Blue
Galaxy	185.48261972911092	-1.593344147053986	Blue
Star	185.66389783419783	-15.486697903533098	Blue
Galaxy	185.84330648828225	-0.1338075560321897	Blue
Galaxy	186.051943489446	0.5669364629276971	Blue
QSO	186.08805453702857	0.3984481006440221	Blue
AGN	186.4280748118269	0.5727372676461775	Blue
Galaxy	186.4474227096049	-1.3349274091067191	Blue
HII G	186.5943422902263	-1.2547941267807978	Blue
HII G	186.5946956629417	-1.2534088007482242	Blue
QSO	186.6069592196776	1.267941658397558	Blue
Seyfert 1	186.67269731032096	-0.3347511966887692	Blue
GinPair	186.7689240600145	-0.9059699735306485	Blue
GinPair	186.7690053713781	-0.9061085611109012	Blue
QSO	186.77970923418985	1.1364780564297168	Blue
Cl*	186.9419456708534	1.6004126119631985	Blue
Galaxy	187.0663127889704	1.828815876976476	Blue
EmG	187.21391718345924	-2.441436093650128	Blue
Galaxy	187.311049563872	-1.365324370079482	Blue
LSB G	187.44305324875543	-1.2950038406448354	Blue
RadioG	187.4953452683044	0.0272052015597826	Red
Galaxy	187.72629290525728	0.9640254113499284	Blue
PartofG	187.95005920551247	-2.970279786813015	Blue
EmG	188.01126587842555	0.5235179491769296	Blue
HII G	188.0984798952765	-1.7400910842643869	Blue
Blue	188.1507145595841	-3.310957494367809	Blue
Star	188.17323029456747	0.0573372798919609	Blue
RRLyr	189.26006228209985	-15.278740375443848	Blue
Star	189.83103561160047	-14.791965932344512	-
Galaxy	191.1121599071608	-12.876636746547932	Blue
Galaxy	192.69598912587915	-14.483746732287928	Blue
Galaxy	194.7464380329297	-13.86174217154326	Blue
Candidate CV*	194.75339729526405	-13.57832034488012	Blue
Galaxy	194.76947807533804	-14.773193673700838	Blue
Galaxy	194.88643900048527	-15.23870530424191	Blue
Galaxy	195.01265981525043	-15.204780538418568	Blue
GinPair	195.1637302491048	-14.666465631319904	Blue
Galaxy	195.27952833886835	-13.517323249547193	Blue
QSO	195.68164279128675	-13.931326571318332	Blue

Table A1: –continued

Type	RA	DEC	Group
EmObj	195.88935067936143	-14.323090018355355	Blue
Galaxy	196.2068792963303	-13.191177561311532	Blue
Galaxy	196.2182957489161	-12.37186182183362	Blue
Galaxy	196.49382904825976	-12.669019185775264	Blue
Galaxy	197.5365518439323	-12.20565697288585	Blue
EmG	197.9928613567656	-12.064271847970153	Blue
Galaxy	198.1183640318735	-10.5901002725042	Blue
EmObj	198.40060156082	-12.470900254658584	Blue
Galaxy	198.7832210949353	-12.518085580918816	Blue
Galaxy	199.4203839129064	-10.183193478269848	Blue
Galaxy	199.42655914037883	-0.3376844496286302	-
AGN	199.4331632480484	-1.000304791159635	Blue
Galaxy	199.8428608076528	-15.156551152235588	Blue
GinGroup	199.9279871875005	-11.474580164900791	Blue
Star	199.9899853471545	-0.5796217824328943	Blue
QSO	199.99667654428632	-12.487991060254044	Blue
Galaxy	200.0847263890424	-12.571681196376176	Blue
QSO	200.0977807916915	-0.7918937289501875	-
Galaxy	200.39451837704632	-15.18209388051804	Blue
Galaxy	200.40763851841496	-14.855478567286989	Blue
EmG	200.5712834913193	-0.5484394981488907	-
RRLyr	200.93371811191045	-12.053272612599368	Blue
BlueCompG	201.45279121661528	-11.610508041620404	Blue
BlueCompG	201.4528190508685	-11.610542402646049	Blue
Galaxy	201.5212567425004	-9.370169275455012	Blue
RRLyr	202.99778408537745	-9.884062720187078	Blue
Radio	204.0776714159391	-7.3810632714249085	Blue
Galaxy	204.1377042494816	-6.47921900688106	Red
Blue	204.7882876783339	-8.327997709939716	Blue
Galaxy	205.2707900815086	-7.018268794365892	Blue
RRLyr	205.8792268775973	-15.316371740752832	Blue
CataclyV*	205.91016519674625	-8.234371065828142	Blue
SN	206.66333089551333	-9.643338332630568	Blue
Blue	206.95757353263463	-4.169611778952146	Blue
Galaxy	207.4258304698629	-2.199743232705236	Blue
Blue	207.63885638270955	-12.278578148358983	Blue
Galaxy	207.8487547626973	-6.069918761179799	Blue
Galaxy	207.89854491435565	-2.554155873440916	Blue
Galaxy	208.0162602836453	-2.122849268399833	Blue
Galaxy	208.0176716348379	-2.1302616063806163	Blue
Galaxy	208.5470343354216	-3.4408967610650127	Blue
Galaxy	208.5475170682714	-3.4408463277549943	Blue
QSO	208.69386729420503	-10.684057890909807	Blue
GinPair	208.89159973272297	-5.971399339776448	Blue
Galaxy	208.907000978763	-4.195508295444852	Blue
Galaxy	208.93941167819	-6.0044269690496535	Blue
Galaxy	208.94449637980523	-6.011323983078441	Blue
QSO	209.0116324685152	-2.4398085262225853	-
Galaxy	209.2228497784912	-2.647844687664313	Blue
Galaxy	209.5359168247792	-4.145441774787235	Blue
Galaxy	209.67286668662445	-1.5210215591711298	Red
Galaxy	210.6878474329628	-7.373825503885681	Blue
QSO	216.7245347178442	5.421495966728137	Blue
Galaxy	216.795092182775	5.133141307382639	Blue
Possible lensImage	217.2307884592734	5.0060874486010265	Blue
Blue	217.2310767118411	5.0055279363461525	Blue
GinCl	217.430980101215	5.356359632037527	Red
BCIG	217.4943714069119	4.769808218972206	Red
Galaxy	220.3668212426573	5.864515543127945	Blue

Table A1: –continued

Type	RA	DEC	Group
QSO	223.43549771425327	4.946107899138475	Blue
AGN	223.89042173389376	4.778676422249849	Red
QSO	300.4321955778412	0.8217833390436116	Blue
low-mass*	301.1349485385638	0.1781570740733244	-
RRLyr	302.7008333786705	-0.2177414034676869	Blue
RRLyr	302.7008333786705	-0.2177414034676869	Blue
RRLyr	305.64797588529285	-0.6694194677482896	Blue
RRLyr	305.6574820578185	-0.0473696356750876	Blue
Galaxy	307.05008700522615	0.288400031713299	Blue
QSO	307.2783691077352	0.9148870344062292	Blue
Seyfert 1	310.91682422695794	0.481551561964735	Blue
QSO	311.6087878150387	0.3938280343112397	Red
CataclyV*	311.8364843167464	0.0021704620321628	Blue
CataclyV*	311.8365168802931	0.0021268467006492	Blue
Seyfert 1	312.2956269426095	0.265970422493022	Blue
QSO	312.4859068430339	-0.2004724242450093	Blue
QSO	312.48592414481044	-0.200477643373699	Blue
QSO	313.3198559349733	0.9892076810353208	-
QSO	313.466816984702	-0.2670765601766264	Blue
Star	314.0606317101171	-0.680733084738148	-
QSO	314.302863294349	0.2031735829473498	Blue
QSO	314.4198074848838	0.9052857685742688	Red
Candidate WD*	314.5268677152485	-30.1383582004064	Blue
Galaxy	314.6022450825876	-32.722916673933284	Blue
Galaxy	314.70702257259086	-44.34018284222228	Blue
Galaxy	314.9896989117314	-21.65968492556584	Blue
CataclyV*	315.05879832773167	0.7460919799647099	Blue
Galaxy	315.48312134293826	-0.5235874873138652	Red
Galaxy	315.48512664422447	-39.394516374889456	Blue
QSO	315.6737967478414	-32.87890999401036	Blue
QSO	315.67381555407934	-32.87898718209263	Blue
Galaxy	315.7592781700893	-45.24473926016992	Blue
Star	315.98609213331895	-21.790860533436685	Blue
IG	316.03549398691706	-43.53423041944633	Blue
GinGroup	316.04653712211586	-43.592725469851146	Blue
Galaxy	316.08943735381246	-30.197214902706765	Red
EmG	316.2304449432887	-0.5893867983932235	Blue
Galaxy	316.3361978919587	-45.98869609290722	Blue
Galaxy	316.41115448294687	-42.7812242143475	Blue
PN	316.47319569385303	-37.14456181858315	Blue
Star	316.7000786165858	-40.334348615950496	Blue
GinPair	316.79991779423176	-47.55699311008755	Blue
GinPair	316.80774783068466	-47.55702616044946	Blue
EmG	318.00385158352736	-0.280345841969967	Blue
AGN	318.10247638771125	-41.48147711626288	Blue
EB*	318.3673788604048	0.0590671476084678	Blue
Galaxy	318.8297135149132	-33.22628044991965	Blue
CataclyV*	319.517818265895	-34.22874036730848	Blue
Radio(cm)	320.7617323963711	-29.251115062981185	Blue
Candidate CV*	321.72725697504	-1.348366630745761	Blue
Galaxy	321.7844092060996	-30.9523274970352	Blue
EmG	322.4759106821289	-1.0564795011399617	Blue
QSO	322.8730471709395	-45.697352338099286	Blue
Galaxy	323.1762194624441	-1.0525538970193808	Blue
Seyfert 1	323.18856454382785	0.0296602067769526	Blue
QSO	323.408936906668	1.4413770493499043	Blue
QSO	323.72952597635833	0.1824349898807966	Blue
QSO	324.20730055187585	-1.481159088195661	Blue
QSO	324.53121345495185	-45.13834354299933	-

Table A1: –continued

Type	RA	DEC	Group
Seyfert 1	324.57901744173665	1.2062510372667887	Blue
Candidate CV*	324.9065914699761	-2.6536034951853305	Blue
QSO	325.2768379376971	0.7926481060166569	Blue
Galaxy	325.4280346483323	0.7597010317264318	Blue
QSO	325.47932878054104	-1.292825833976646	Blue
QSO	325.479329853818	-1.292849791540993	Blue
SN	326.0956022427804	-29.91639450734865	Red
EmG	326.2329872209474	0.3850203444962297	Blue
Galaxy	326.4167001057865	-29.32690805408077	Red
EmG	327.1275218035224	-0.7979329669827752	Blue
EmG	327.127535195112	-0.797904422039106	-
QSO	327.5112425223878	1.2288440704579693	Blue
QSO	327.54385873207247	-0.1668265647596742	Blue
Galaxy	328.2731418249827	-31.471640527742185	Blue
Galaxy	328.2731418249827	-31.471640527742185	Blue
Galaxy	328.2731418249827	-31.471640527742185	Blue
Galaxy	328.2731418249827	-31.471640527742185	Blue
Galaxy	328.57500430647343	0.9422073085758816	Blue
Galaxy	329.0576398034554	-1.1618941444509447	Blue
Galaxy	329.0576982984844	-1.1619911379394898	Blue
Galaxy	329.08245077543467	-1.1676749952103018	Blue
Galaxy	329.0825336876782	-1.167693306004015	Blue
Galaxy	329.3370362394045	-25.133993290826115	Blue
HII G	329.6011751965016	-0.737145415174484	Blue
Galaxy	329.76204963872004	-0.5550013061974669	Blue
Galaxy	329.7629603765794	-1.9550737068589068	Blue
Galaxy	330.4586482938667	-0.7074127748175637	Blue
Galaxy	330.5294901692158	-26.44390115708122	Blue
Star	330.8130711615091	1.2891533854468642	Blue
Galaxy	331.22366426801165	-25.051456106463764	Blue
QSO	331.37225331383246	-0.5196269942518518	Blue
IG	331.7304425939274	-31.052944378400603	Red
Galaxy	331.89396381531327	-28.65815178172343	Blue
GinGroup	332.1018041812308	-29.05100572704748	Blue
Galaxy	332.21648908406854	-30.64966912723208	-
QSO	332.2165318654766	-1.1010232176217527	Blue
QSO	332.21654479357403	-1.1010212789856892	Blue
GinPair	332.2329099311068	-27.22278199790022	Blue
QSO	332.3293752575985	-24.12012102380704	Red
Galaxy	332.34547450375544	-25.417946056108004	Blue
WD*	332.45263484436884	-30.23217545253064	Blue
Galaxy	332.4639565862639	1.1500007990678438	Red
QSO	332.4773666618215	-1.454892271729591	Blue
EmG	332.50311376214466	-31.23332648999496	Blue
Galaxy	332.51558209616104	-25.335365131244853	Blue
Galaxy	332.5240068270393	-27.91075708397664	Blue
Galaxy	332.7416878016213	-25.07531023085714	Blue
Galaxy	332.7430386884259	-27.658157768445044	Blue
SN	333.17320112679323	0.5119642601996512	Blue
QSO	333.3985380422876	-28.42824210005132	Blue
Galaxy	333.51191857192214	-27.53928600571248	Blue
Galaxy	333.5119857829216	-27.53930260557384	Blue
EmG	333.5134692326156	-29.38272127795172	Blue
Galaxy	333.5212380480937	-29.381350935720462	Blue
EmG	333.600966286032	-29.98098137914205	Blue
Galaxy	333.6746944454729	-28.44433992901234	Blue
Galaxy	333.69650411507115	-29.68677871511806	Blue
EmG	333.8212699349557	-28.89929996827705	Blue
QSO	333.88574209843875	-28.301075647502863	Blue

Table A1: –continued

Type	RA	DEC	Group
EmG	334.1253072836468	-29.01480498338059	Red
Galaxy	334.2771669200802	-30.579476065999444	Red
QSO	334.3435194955581	1.0767543256819685	Blue
Galaxy	334.421449319186	-27.365163382540192	Blue
Galaxy	334.5579398251045	0.2736951228444171	-
Galaxy	334.56262843755	1.254694273842988	Blue
AGN	334.57190645739905	0.6065838369084469	Red
Seyfert 1	334.58077291303573	-27.26228422509564	Blue
Galaxy	334.6947482712885	-1.188558994516001	Blue
Galaxy	334.69475415064494	-1.1885577406117744	Blue
Galaxy	334.71939499895126	-1.0529142510236456	Blue
EmG	334.8579955716732	-30.852129377014343	Blue
Galaxy	334.9364411418472	-0.2444533826638444	Red
EmG	334.93782729725075	-29.57039409080591	Blue
Galaxy	334.9744213770292	0.4846689985595231	Blue
Star	335.08900553863754	0.6779085075975249	Blue
Seyfert 1	335.3067522132758	-28.07246239885318	Red
Galaxy	335.72883636182854	-30.70788858469623	Blue
Galaxy	335.8070780085201	-28.979058837654552	Blue
QSO	335.88681821013813	-1.10412204251795	Blue
EmG	335.90012802575814	-28.527653500762096	Blue
QSO	336.01397097341777	-0.9567096099850134	Blue
QSO	336.01401051604205	-0.9566969699045356	Blue
Candidate CV*	336.0677440421202	-29.40602881395364	Blue
Galaxy	336.912099323913	-31.136207086254505	Blue
Galaxy	337.1046549602956	-0.3714489675823685	Red
Galaxy	337.19918624431745	-30.91199843220645	Blue
Galaxy	337.1992648299098	-30.911989220539105	Blue
Galaxy	337.22360618425245	-30.980939741660382	Blue
Galaxy	337.22360894565986	-30.98095563687505	Blue
QSO	337.3458366571309	-2.011785900315515	-
QSO	337.48557309949206	0.5240235390794395	Blue
Galaxy	337.5076760184757	-29.597960152831284	Blue
Galaxy	337.50768925239095	-29.59794652431351	Blue
BlueCompG	337.653463904362	-0.1099571744851075	Blue
Galaxy	337.7750079939556	-0.1955294013694825	Blue
Star	337.80812689962085	-31.33455219401752	Blue
QSO	338.2155980841278	-30.54711277145381	Blue
Galaxy	338.4273343986453	-30.32651312377564	Blue
Star	338.5277783244117	0.0224447956398556	Red
CataclyV*	338.66637521384126	0.6909664418071105	Blue
Galaxy	338.73567173096313	-31.145574300500385	Blue
Galaxy	338.73569433672816	-31.1455850268799	Blue
Seyfert 2	338.78506511786827	-0.8998369935534453	Red
Seyfert 2	338.785109135079	-0.8998316294838345	Red
EmG	338.88432907328246	-29.77583940043047	Blue
Galaxy	338.92933238127915	-0.9101766325827358	Blue
Galaxy	338.92938653521645	-0.9101558150095174	Blue
Galaxy	338.9294202112855	-0.9100982563435506	Blue
low-mass*	338.9330431386031	-0.6589082844776932	Red
HII	338.9369542908973	-26.040945424398046	Blue
HII	338.9391682825249	-26.03634410855905	Blue
HII	338.942864761339	-26.074740893365583	Blue
HII	338.9509617589531	-26.02333197997694	Blue
QSO	339.139729783869	0.4480037094611175	Blue
QSO	339.20666171031564	0.9038310163367896	-
Galaxy	339.3495140772359	-1.0219920514291434	Blue
HB*	339.3744168628378	-1.09702098520342	-
QSO	339.5968891921001	-0.952268013442764	Blue

Table A1: –continued

Type	RA	DEC	Group
QSO	339.5969264365535	-0.9522370681869864	Blue
QSO	339.6845594683822	-0.948694319373839	Blue
Galaxy	340.3312015654902	-39.97314857397814	Blue
Galaxy	340.4562435334129	-30.329015431975083	Blue
Galaxy	340.81825118013086	-39.86108916393093	Blue
Galaxy	340.8308173956169	-39.87900062583571	Blue
Galaxy	340.854608426132	-39.92223577354626	Red
Galaxy	340.96755531580084	-0.3832981583866523	Blue
QSO	341.3799824113044	-0.7526108924743485	Blue
QSO	341.3799836615205	-0.7525947660724432	Blue
QSO	341.4164203070588	-0.4054482118161328	Blue
QSO	342.4836663184702	0.0384316128868782	Blue
Galaxy	342.55381866523845	-0.666369376718931	Blue
QSO	342.95730339479854	-0.4698259059306293	Blue
EmG	342.9879147578966	-29.414118119813367	Blue
Star	343.2393387782164	0.4587823345606925	Blue
Seyfert 1	343.4706720102698	-30.162151096626257	Blue
QSO	343.54646400880233	-31.45314972730561	Blue
QSO	343.5498267824822	-0.8303920878390473	Blue
QSO	343.5498379046172	-0.8303498619565828	Blue
EmG	343.76622684097015	-30.32036536315227	Blue
Star	344.7838160610223	-31.454652481082007	Blue
Galaxy	345.12539458156243	-0.5016202410575213	Blue
QSO	345.5049924642404	0.5131468261640252	Blue
QSO	345.6476494287596	-28.941580257566937	Blue
QSO	345.8183544369748	-0.2031687049072709	Blue
CataclyV*	345.9651406629765	1.11426658072561	Blue
QSO	346.1180884490532	0.950341888510796	Blue
QSO	346.183995707146	-1.047637756170335	Blue
Galaxy	347.04492000641267	-1.299588506149179	Blue
QSO	347.231188850614	0.6182549476788003	Blue
GinGroup	347.2316580483845	-30.85783430936128	Blue
QSO	347.3096188733344	-30.986794418426523	Blue
Seyfert 1	347.44230168607083	0.0136411947639146	Blue
Seyfert 1	347.4423475040321	0.0136153759642055	Blue
EmG	347.67494008100954	-1.1633342696409468	Blue
QSO	347.8963319528839	-31.445592377850765	Blue
Galaxy	348.0373247446722	-31.070356404741503	Red
QSO	348.13067741527794	-1.1937043288787734	Blue
QSO	348.2461021601764	1.1349593899913708	Blue
QSO	348.299611065616	-0.7605497687369258	Blue
HII G	348.46608265183744	-1.1752128153912331	Blue
LSB G	348.7105150733019	1.390757174203209	Blue
QSO	348.8308033561476	-30.64921915522369	Blue
CataclyV*	348.88240046675367	-30.813531857016685	Blue
QSO	349.2168428172675	0.8571987065141106	Blue
Seyfert 1	349.42752127421284	0.093129280239253	Blue
QSO	349.92814830462225	-30.44152729995124	Blue
Galaxy	350.1467244968801	-0.8808002402296434	Blue
Galaxy	350.1467502457788	-0.8807767191983554	Blue
Galaxy	350.3604588557264	-31.12485243647311	Blue
RRLyr	350.88051361237183	1.134997376685103	Blue
HII	351.0847562454346	-0.1069557818481737	Blue
HII G	351.08902800249376	-0.1081688053941925	Blue
QSO	351.2406451424701	0.3648363114586009	Blue
Galaxy	351.3517724774783	0.7700617331859075	Blue
CataclyV*	351.46448670155314	-1.6732732825345382	Blue
Seyfert 1	351.4812848799453	-0.619649969309404	-
BlueCompG	351.9320769678968	-2.0154836384737007	Blue

Table A1: –continued

Type	RA	DEC	Group
Galaxy	351.9349111408217	-2.0130122785984863	Blue
HII G	352.05124626986577	-1.0624481917322088	Blue
CataclyV*	352.25183229093045	-29.77943600230389	Blue
QSO	352.768315319454	-0.7102948577467144	Red
Galaxy	352.99905235631786	-0.8051318589747921	Blue
EmG	353.22826977772627	-30.978836100206514	Blue
BCIG	353.2361807443991	1.1897411683153614	-
QSO	353.25093145251367	-0.3418033383059611	Blue
QSO	353.660612982189	0.3949855898346673	Blue
Galaxy	353.8374272193407	1.1742822684735112	Red
QSO	353.8445277828368	-0.1097797881436761	Blue
LSB G	354.19570227897805	0.6232818326354911	Blue
QSO	354.3417350883094	0.3775467635964666	Blue
AGN	354.38244578497734	0.4333010734691366	Blue
GinCl	354.4482155147033	0.295228446902126	-
Galaxy	355.16011198023494	-0.8918305906086714	Blue
QSO	355.8714951658231	-30.03336765255501	Blue
CataclyV*	356.1688766402904	-0.2016823731104521	Blue
Galaxy	357.0999479884554	-1.7919613357037034	Blue
Galaxy	357.50647665269133	-30.18530531379982	Blue
Galaxy	357.8152522370048	-1.0744996159314814e-05	Blue
Galaxy	357.8153294830434	-5.8998646198314144e-05	Blue
QSO	358.9422665997112	-0.3952102105534735	Blue
QSO	359.32653511559846	0.7307049350125405	Red
QSO	359.5218549462989	-1.3649719892078715	Blue

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