Value-Added Catalog of DRAGNs and Single-Component Radio Sources in VLASS

Y. A. Gordon and CIRADA

This catalog is described in full in Gordon et al. (2023). In this document we outline the data model of the catalog, which consists of two tables. First, a Source Table gives a list of all sources (DRAGNs and single-component source) with some basic source parameters and host information where available. Second, a DRAGN Information Table provides additional data only applicable to the DRAGNs. The column definitions for these tables are given below.

Table 1. Source Table (`sources.fits`) column definitions

Column Name	Column Description [notes]	Units
Name	Julian name of source (Jhhmmss.ss±ddmmss.s)	
RA	R.A. of the source	deg
DEC	Decl. of the source	deg
Flux	Total flux density of the source	mJy
E_Flux	Uncertainty in *Flux*	mJy
LAS	Estimate of the Largest Angular Size of the source	arcsec
E_LAS	Uncertainty in *LAS*	arcsec
Type	Type of source [**1**]	
Source_flag	Source quality flag (> 0 is suspect) [**2**]	
AllWISE	Name of the AllWISE host ID	
RA_AllWISE	R.A. of the AllWISE host	deg
DE_AllWISE	Decl. of the AllWISE host	deg
Sep_AllWISE	Angular separation between radio source and AllWISE host ID	arcsec
LR	Likelihood ratio of host ID	
Rel	Probabilty that the host is correct	
Host_flag	Host ID flag (> 0 is suspect) [**3**]	
W1mag	Vega magnitude of AllWISE host in the W1 band	mag
E_W1mag	Uncertainty in *W1mag*	mag
W2mag	Vega magnitude of AllWISE host in the W1 band	mag
E_W2mag	Uncertainty in *W2mag*	mag
W3mag	Vega magnitude of AllWISE host in the W1 band	mag
E_W3mag	Uncertainty in *W3mag*	mag
W4mag	Vega magnitude of AllWISE host in the W1 band	mag
E_W4mag	Uncertainty in *W4mag*	mag
z	Host redshift [**4**]	
z_err	Uncertainty in *z*	
z_type	Redshift type	
z_survey	Survey that the redshift was obtained from	

TABLE 2. DRAGN INFORMATION TABLE (`dragns.fits`) column definitions

Column Name	**Column Description [notes]**	**Units**
Name	Julian name of source (Jhhmmss.ss±ddmmss.s)	
RA	R.A. of the source	deg
DEC	Decl. of the source	deg
Flux	Total flux density of the source	mJy
E_Flux	Uncertainty in *Flux*	mJy
Core_prom	Fraction of *Flux* associated with *Core*	
E_Core_prom	Uncertainty in *Core_prom*	
Lobe_flux_ratio	Ratio of the flux from *Lobe_1* to the flux from *Lobe_2*	
E_Lobe_flux_ratio	Uncertainty in *Lobe_flux_ratio*	
LAS	Estimate of the Largest Angular Size of the source	arcsec
E_LAS	Uncertainty in *LAS*	arcsec
Misalign_1	Relative misalignment of *Lobe_1*	deg
E_Misalign_1	Uncertainty in *Misalign_1*	deg
Misalign_2	Relative misalignment of *Lobe_2*	deg
E_Misalign_2	Uncertainty in *Misalign_2*	deg
Mean_misalign	Mean value of *Misalign_1* and *Misalign_2*	deg
E_Mean_misalign	Uncertainty in *Mean_misalign*	deg
Lobe_1	Component name of *Lobe_1*	
Lobe_2	Component name of *Lobe_2*	
Core	Component name of *Core* if identified	
RA_core	R.A. of *Core*	deg
DEC_core	Decl. of *Core*	deg
RA_median	Median R.A. of two lobes	deg
DEC_median	Median Decl. of two lobes	deg
RA_fw	Flux-weighted central R.A. of two lobes	deg
DEC_fw	Flux-weighted central Decl. of two lobes	deg
Source_flag	Source quality flag (> 0 is suspect) [**2**]	
AllWISE	Name of the AllWISE host ID	
Sep_AllWISE	Angular separation between radio source and AllWISE host ID	arcsec
LR	Likelihood ratio of host ID	
Rel	Probabilty that the host is correct	
Host_flag	Host ID flag (> 0 is suspect) [**3**]	

Column notes:

[1] 'S': single-component,
'D': DRAGN.

[2] 1: *Type*=='D' with either $Lobe\_flux\_ratio < 0.1$,
or $Lobe\_flux\_ratio > 10$,
or $LAS/E\_LAS < 20$,
0: All other sources

[3] 1: DRAGN where the host and radio core not co-located,
0: DRAGN without a radio core or single-component source,
-1: DRAGN where likelihood ratio host ID has been updated to a host co-located with the radio core,
-2: DRAGN where likelihood ratio host ID is co-located with the radio core.

[4] Spectroscopic redshifts are obtained from one of:
- SDSS DR16 (Ahumada et al., 2020),
- 6dFGS (Jones et al., 2009),
- 2MRS (Huchra et al., 2012),
- WiggleZ (Drinkwater et al., 2018),
- 2dFGRS (Colless et al., 2001),
- GAMA DR3 (Baldry et al., 2018),

Photometric redshifts are obtained from the Duncan (2022) catalog of photo-zs in the DESI imaging Legacy Surveys Data Release 8 (LS DR8, Dey et al., 2019).

References

Ahumada, R., Prieto, C. A., Almeida, A., et al. 2020, ApJS, 249, 3, doi: 10.3847/1538-4365/ab929e

Baldry, I. K., Liske, J., Brown, M. J. I., et al. 2018, MNRAS, 474, 3875, doi: 10.1093/mnras/stx3042

Colless, M., Dalton, G., Maddox, S., et al. 2001, MNRAS, 328, 1039, doi: 10.1046/j.1365-8711.2001.04902.x

Dey, A., Schlegel, D. J., Lang, D., et al. 2019, AJ, 157, 168, doi: 10.3847/1538-3881/ab089d

Drinkwater, M. J., Byrne, Z. J., Blake, C., et al. 2018, MNRAS, 474, 4151, doi: 10.1093/mnras/stx2963

Duncan, K. J. 2022, MNRAS, 512, 3662, doi: 10.1093/mnras/stac608

Gordon, Y. A., Rudnick, L., Andernach, H., et al. 2023, submitted to ApJS, arXiv:2303.12830, doi: 10.48550/arXiv.2303.12830

Huchra, J. P., Macri, L. M., Masters, K. L., et al. 2012, ApJS, 199, 26, doi: 10.1088/0067-0049/199/2/26

Jones, D. H., Read, M. A., Saunders, W., et al. 2009, MNRAS, 399, 683, doi: 10.1111/j.1365-2966.2009.15338.x