N	u	m

	FGL_Name	ASSOC_name	4FGL_Class	4FGL_SED_Class	From	То	reference	ADS
1	3FGL J0049.7+0237			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
3	3FGL J0141.4-0929 3FGL J0238.6+1636		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
4	3FGL J0334.3-4008			LSP	LSP BL Lac	FSRQ	FANXL fsrq	2019ApJ879107F
5	3FGL J0407.5+0740			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
6	3FGL J0428.6-3756			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
8	3FGL J0433.6+2905 3FGL J1800.5+7827			LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
9	3FGL J0438.8-4519			LSP	LSP BL Lac	FSRQ	FANXL fsrq	2019ApJ879107F
10	3FGL J0434.0-2010			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
11	3FGL J0538.8-4405			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
12	3FGL J0629.4-1959 3FGL J0738.1+1741		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
14	3FGL J0811.3+0146			LSP	LSP BL Lac	FSRQ	FANXL fsrq	2019ApJ879107F
15	3FGL J0818.2+4223			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
16	3FGL J0826.0+0307			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
17 18	3FGL J1748.6+7005 3FGL J1058.5+0133		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
19	3FGL J1218.0-0029			LSP	LSP BL Lac	FSRQ	FANXL fsrq	2019ApJ879107F
20	3FGL J1250.5+0217			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
21	3FGL J1303.0+2435			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
22	3FGL J1522.6-2730 3FGL J1540.8+1449		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
24	3FGL J1824.2+5649			LSP	LSP BL Lac	FSRQ	FANXL fsrq	2019ApJ879107F
25	3FGL J2031.8+1223			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
26	3FGL J2134.1-0152			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
27	3FGL J2152.4+1735 3FGL J2206.9-0031	-	-	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
29	3FGL J2206.9-0031 3FGL J2217.0+2421		†	LSP	LSP BL Lac	FSRQ	FANAL_isrq FANXL fsrq	2019ApJ879107F
30	3FGL J2236.3+2829			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
31	3FGL J2243.4-2541			LSP	LSP BL Lac	FSRQ	FANXL_fsrq	2019ApJ879107F
32	3FGL J2244.1+4057 3FGL J2315.7-5018	-	 	LSP LSP	LSP BL Lac	FSRQ FSRQ	FANXL_fsrq FANXL_fsrq	2019ApJ879107F 2019ApJ879107F
JJ	DF GL 92313.7-3010			14.0.1	LOI DE LAC	rany	FARAL_ISTQ	-v12/2p00/21U/F
1	4FGL J1302.8+5748			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
2	4FGL J2346.7+8008			LSP LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
4	4FGL J2357.4-0152 4FGL J2200.3+1029			LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
5	4FGL J2241.2+4120			LSP	LSP BL Lac	FSRQ	cheng fsrq	2022MNRNS5152215.
6	4FGL J1224.9+4334			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
7	4FGL J0359.4-2616			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
9	4FGL J0403.5-2437 4FGL J0208.5-0046		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
10	4FGL J0610.1-1848			LSP	LSP BL Lac	FSRQ	cheng fsrq	2022MNRNS5152215.
11	4FGL J1439.7+4958			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
12	4FGL J1445.9-1626			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
13	4FGL J1148.6+1841 4FGL J1954.6-1122		1	LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
15	4FGL J1201.7+1429			LSP	LSP BL Lac	FSRQ	cheng fsrq	2022MNRNS5152215.
16	4FGL J2315.6-5018			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
17	4FGL J0209.9+7229			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
18 19	4FGL J0832.4+4912 4FGL J1427.6-3305			LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
20	4FGL J1329.0-5607			LSP	LSP BL Lac	FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215
21	4FGL J1500.7+4752			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
22	4FGL J1410.1+0202			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
23	4FGL J2257.5+0748 4FGL J1315.1-5333			LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
25	4FGL J0113.7+0225			LSP	LSP BL Lac	FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215
26	4FGL J0710.9+4733			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
27	4FGL J2152.5+1737			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
28	4FGL J0407.5+0741			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
29 30	4FGL J2056.7-3209 4FGL J2050.0+0408			LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
31	4FGL J2049.9+1002			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
32	4FGL J1516.9+1934			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
33	4FGL J1717.5-3342	ļ	<u> </u>	LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
34 35	4FGL J1941.3-6210 4FGL J2216.9+2421	-	-	LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq	2022MNRNS5152215. 2022MNRNS5152215.
36	4FGL J2216.9+2421 4FGL J0438.9-4521	+	 	LSP	LSP BL Lac	FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215 2022MNRNS5152215
37	4FGL J2010.0+7229		<u> </u>	LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
38	4FGL J1330.4+3157	L		LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
39	4FGL J0747.3-3310 4FGL J1326.8-5256	1	1	LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
40	4FGL J1326.8-5256 4FGL J2032.0+1219	1	 	LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215 2022MNRNS5152215
42	4FGL J1604.5-4441			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
43	4FGL J1824.1+5651			LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
44	4FGL 11641.9-0621	-	-	LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215.
45 46	4FGL J1650.3-5045 4FGL J2134.2-0154	-	 	LSP LSP	LSP BL Lac	FSRQ FSRQ	cheng_fsrq cheng_fsrq	2022MNRNS5152215 2022MNRNS5152215
47	4FGL J2025.3+3341	1		LSP	LSP BL Lac	FSRQ	cheng_fsrq	2022MNRNS5152215
			,					
	AEGI IOSSO C 150-	DEC 0225 : 151	lum .	Lico		EDGG	D 1000-	20224 - 7 025 02-
2	4FGL J0238.6+1637 4FGL J0538.8-4405	PKS 0235 +164 PKS 0537-441	bll	LSP LSP	BL Lacs BL Lacs	FRSQs FRSQs	Pei2022 Pei2022	2022ApJ92597P 2022ApJ92597P
	GE 60556.0-4405	1.150 000 1-771	I MII	TEO!	DL Lats	FROQ	1 (12022	15755UD35331F
1	4FGL J0833.9+4223	SDSS J083353.88+422401.8	fsrq	LSP	P-BLL	FSRQ-like	Ruan et al. (2014)	2020ApJ892105A
3	4FGL J1016.0+0512	SDSS J101603.13+051302.3	fsrq	LSP	P-BLL	FSRQ-like	Ruan et al. (2014)	2020ApJ892105A
4	4FGL J1308.5+3547 4FGL J2206.8-0032	SDSS J130823.70+354637.0 SDSS J220643.28-003102.5	fsrq bll	LSP LSP	P-BLL P-BLL	FSRQ-like FSRQ-like	Ruan et al. (2014) Ruan et al. (2014)	2020ApJ892105A 2020ApJ892105A
5	4FGL J1250.6+0217	SDSS J125032.57+021632.1	bll	LSP	P-BLL	FSRQ-like	Ruan et al. (2014)	2014ApJ79719R
6		SDSS J143758.67+300207.1			P-BLL	FSRQ-like	Ruan et al. (2014)	2014ApJ79719R
0		SDSS J083223.22+491321.0^a			not transition		Ruan et al. (2014)	2014ApJ79719R
		eAlibedu to be a transfer						
		a^likely to be a transition blazar						
1	4FGL J0058.4+3315		fsrq	LSP	BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G
2	4FGL J0210.7-5101	-	fsrq	LSP	BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G
	4FGL J0538.8-4405	Į.	bll		BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G
4	4FGL J0811.4+0146		bll	LSP	BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G

In Pei	4FGL J0428.6-3756		bll	LSP	BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G
In Pei								
	4FGL J1503.5+4759	3FGL J1503.7+4759	BLL	LSP	bll	bzq	Peña-Herazo et al. (2021)	
In_Pei		CLASSJ1503+4759						
In_Pei	1FGL J1503.3+4759	SDSS J150347.99+475930.9	BLL	LSP				
In_Pei	4FGL J1503.5+4759	TXS 1501+481	bll	LSP	bll	bzq	Peña-Herazo et al. (2021)	ļ
In_Pei	4FGL J1001.1+2911	B0958+294	bll	LSP	bzb	bzq	Peña-Herazo et al. (2021)	
In_Pei	4FGL J1043.2+2408	TXS 1040+244	fsrq	LSP	bzq	bzb	Peña-Herazo et al. (2021)	
1	4FGL J1410.3+1438	NVSS J141028+143841	bll	NA	bll	bzq	Peña-Herazo et al. (2021)	
2	4FGL J1503.5+4759	TXS 1501+481	bll	LSP	bll	bzq	Peña-Herazo et al. (2021)	
5	4FGL J0022.0+0006	5BZG J0022+0006	bll	HSP	bzg	bzb	Peña-Herazo et al. (2021)	†
6	4FGL J0303.3+0555	5BZG J0303+0554	bll	HSP	bzg	bzb	Peña-Herazo et al. (2021)	
9	4FGL J0916.7+5238	5BZG J0916+5238	bll	HSP	bzg	bzb	Peña-Herazo et al. (2021)	
10	4FGL J1001.1+2911	5BZB J1001+2911	bll	LSP	bzb	bzq	Peña-Herazo et al. (2021)	
11	4FGL J1043.2+2408	5BZQ J1043+2408	fsrq	LSP	bzq	bzb	Peña-Herazo et al. (2021)	
13	4FGL J1056.0+0253	5BZG J1056+0252	bll	NA	bzg	bzb	Peña-Herazo et al. (2021)	
15	4FGL J1106.0+2813	5BZQ J1106+2812	fsrq	LSP	bzq	bzb	Peña-Herazo et al. (2021)	
17	4FGL J1321.1+2216	5BZQ J1321+2216	fsrq	LSP	bzq	bzb	Peña-Herazo et al. (2021)	
18 20	4FGL J1326.1+1232 4FGL J1402.6+1600	5BZG J1326+1229 5BZB J1402+1559	bli	HSP ISP	bzg bzb	bzb bzq	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	+
21	4FGL J1449.5+2746	5BZG J1449+2746	rdq	ISP	bzg	bzb	Peña-Herazo et al. (2021)	
23	4FGL J1512.2+0202	5BZG J1512+0203	fsrq	LSP	bzg	bzg	Peña-Herazo et al. (2021)	
24	4FGL J1730.8+3715	5BZG J1730+3714	bll	ISP	bzg	bzb	Peña-Herazo et al. (2021)	
							(====)	
3		SDSS J134240.02+094752.4			bzq	bzb	Peña-Herazo et al. (2021)	
4		5BZG J0006+1051			bzg	bzb	Peña-Herazo et al. (2021)	
7		5BZG J0751+1730			bzg	bzq	Peña-Herazo et al. (2021)	
8		5BZG J0756+3834			bzg	bzq	Peña-Herazo et al. (2021)	
12		5BZQ J1054+3855	1		bzq	bzb	Peña-Herazo et al. (2021)	1
14	-	5BZG J1103+0022	 	+	bzg	bzb	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	
16 19		5BZQ J1243+4043 5BZQ J1343+2844	1		bzq bzq	bzb bzb	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	
22		5BZG J1504-0248	l		bzg	bzq	Peña-Herazo et al. (2021)	<u> </u>
25		5BZG J1733+4519	i		bzg	bzb	Peña-Herazo et al. (2021)	1
26		5BZG J2346+4024	İ		bzg	bzq	Peña-Herazo et al. (2021)	1
	•							
	T		•	1				
1	4FGL J0134.5+2637	ļ	fsrq	HSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
2	4FGL J0910.0+4257	1	CSS	NA	featureless	CSS	Foschini, Luigi 2021	2021Univ7372F
4	4FGL J0510.0+1800 4FGL J0449.1+1121	+	fsrq	LSP LSP	featureless featureless	fsrq	Foschini, Luigi 2021 Foschini, Luigi 2021	2021Univ7372F 2021Univ7372F
5	4FGL J0449.1+1121 4FGL J0719.3+3307	 	fsrq fsrq	LSP	featureless	fsrq fsrq	Foschini, Luigi 2021	2021Univ7372F
6	4FGL J0719.5+3367	 	fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
7	4FGL J0833.9+4223	İ	fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
8	4FGL J0509.4+1012		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
9	4FGL J0217.8+0144		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
10	4FGL J0522.9-3628		AGN	LSP	featureless	AGN	Foschini, Luigi 2021	2021Univ7372F
11	4FGL J1037.4-2933		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
1		5BZB J0724+2621	1		BL Lac	FSRO	Álvarez Cresno, N 2016	2016AJ15132A
1		5BZB J0724+2621			BL Lac	FSRQ	Álvarez Crespo, N 2016	2016AJ15132A
1		5BZB J0724+2621 SDSS J211354.71+112125.3			BL Lac FSRQ	FSRQ without BELs	Álvarez Crespo, N 2016 Pasham2019	2016AJ15132A 2019RNAAS392P
1 1+ 1	4FGL J2202.7+4216	SDSS J211354.71+112125.3 AT2019evq BL Lac	bll	LSP	FSRQ FSRQ LSP BL Lac	without BELs without BELs FSRQ	Pasham2019 Pasham2019 Vermeulen et al. 1995	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014)
1 1+ 1 1	4FGL J1422.3+3223	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32	fsrq	LSP	FSRQ FSRQ LSP BL Lac FSRQ	without BELs without BELs FSRQ BL Lac	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M
1 1+ 1	4FGL J1422.3+3223 4FGL J1153.4+4931	SDSS J211354.71+112125.3 AT2019evq BBL Lac B2 1420+32 4C+29.22 (S4 1150+49)	fsrq fsrq	LSP LSP	FSRQ FSRQ LSP BL Lac	without BELs without BELs FSRQ	Pasham2019 Pasham2019 Vermeulen et al. 1995	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931 4FGL J2151.8-3027	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32 4C+29.22 (S4 1150+49) PKS 2149-306	fsrq fsrq fsrq	LSP LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ FSRQ	without BELs without BELs FSRQ BL Lac BL Lacs	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021) Cutini et al. (2014)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C 2009A&A496423B
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931	SDSS J211354.71+112125.3 AT2019evq BBL Lac B2 1420+32 4C+29.22 (S4 1150+49)	fsrq fsrq	LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ	without BELs without BELs FSRQ BL Lac	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931 4FGL J2151.8-3027	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32 4C+29.22 (S4 1150+49) PKS 2149-306	fsrq fsrq fsrq	LSP LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ FSRQ	without BELs without BELs FSRQ BL Lac BL Lacs	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021) Cutini et al. (2014)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C 2009A&A496423B
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931 4FGL J2151.8-3027	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32 4C+29.22 (S4 1150+49) PKS 2149-306	fsrq fsrq fsrq	LSP LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ FSRQ	without BELs without BELs FSRQ BL Lac BL Lacs	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021) Cutini et al. (2014)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C 2009A&A496423B
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931 4FGL J2151.8-3027	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32 4C+29.22 (S4 1150+49) PKS 2149-306	fsrq fsrq fsrq	LSP LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ FSRQ	without BELs without BELs FSRQ BL Lac BL Lacs	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021) Cutini et al. (2014)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C 2009A&A496.423B
1 1+ 1 1	4FGL J1422.3+3223 4FGL J1153.4+4931 4FGL J2151.8-3027	SDSS J211354.71+112125.3 AT2019evq BL Lac B2 1420+32 4C+29.22 (S4 1150+49) PKS 2149-306	fsrq fsrq fsrq	LSP LSP LSP	FSRQ FSRQ LSP BL Lac FSRQ FSRQ	without BELs without BELs FSRQ BL Lac BL Lacs FSRQ	Pasham2019 Pasham2019 Vermeulen et al. 1995 Mishra et al. (2021) Cutini et al. (2014)	2019RNAAS392P 2019RNAAS392P Ruan et al. (2014) 2021ApJ913146M 2014MNRAS.445.4316C 2009A&A496.423B
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