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

	6	4FGL J0428.6-3756		bll	LSP	BL Lacs	FS	Ghisellini et al. (2011)	2011MNRAS.414.2674G
	n_Pei	4FGL J1503.5+4759	3FGL J1503.7+4759	BLL	LSP	bll	bzq	Peña-Herazo et al. (2021)	
	n_Pei n Pei	1FGL J1503.3+4759	CLASSJ1503+4759 SDSS J150347.99+475930.9	BLL	LSP				
	n_Pei	4FGL J1503.5+4759	TXS 1501+481	bll	LSP	bll	bza	Peña-Herazo et al. (2021)	
		4FGL J1001.1+2911	B0958+294	bll	LSP	bzb	bzq	Peña-Herazo et al. (2021)	
	n_Pei	4FGL J1043.2+2408	TXS 1040+244	fsrq	LSP	bzq	bzb	Peña-Herazo et al. (2021)	
		4ECT 11410 2 : 1420	NUCC 1141020: 142041	I. u	la i a	L-11	h	D. 7 . H (2021)	
	1 2	4FGL J1410.3+1438 4FGL J1503.5+4759	NVSS J141028+143841 TXS 1501+481	bll	NA LSP	bll	bzq	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	
	5	4FGL J0022.0+0006	5BZG J0022+0006	bll	HSP	bll bzg	bzq 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 18	4FGL J1321.1+2216 4FGL J1326.1+1232	5BZQ J1321+2216 5BZG J1326+1229	fsrq bll	LSP HSP	bzq bzg	bzb bzb	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	
	20	4FGL J1402.6+1600	5BZB J1402+1559	bll	ISP	bzb	bzq	Peña-Herazo et al. (2021)	
	21	4FGL J1449.5+2746	5BZG J1449+2746	rdg	ISP	bzg	bzb	Peña-Herazo et al. (2021)	
	23	4FGL J1512.2+0202	5BZG J1512+0203	fsrq	LSP	bzg	bzq	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		1	bzq	bzb	Peña-Herazo et al. (2021)	
	4 7		5BZG J0006+1051 5BZG J0751+1730	-	+	bzg	bzb	Peña-Herazo et al. (2021) Peña-Herazo et al. (2021)	1
	8		5BZG J0751+1730 5BZG J0756+3834	-	+	bzg bzg	bzq bzq	Peña-Herazo et al. (2021)	1
	12		5BZQ J1054+3855		1	bzq	bzb	Peña-Herazo et al. (2021)	1
	14		5BZG J1103+0022		İ	bzg	bzb	Peña-Herazo et al. (2021)	İ
	16		5BZQ J1243+4043			bzq	bzb	Peña-Herazo et al. (2021)	
	19		5BZQ J1343+2844			bzq	bzb	Peña-Herazo et al. (2021)	
	22	-	5BZG J1504-0248		1	bzg	bzq	Peña-Herazo et al. (2021)	
	25		5BZG J1733+4519	-	+	bzg	bzb	Peña-Herazo et al. (2021)	1
	26		5BZG J2346+4024		1	bzg	bzq	Peña-Herazo et al. (2021)	<u> </u>
	1	4FGL J0134.5+2637	ı	fera	HSP	featureless	fo	Foschini, Luigi 2021	2021Univ7372F
	2	4FGL J0134.5+2637 4FGL J0910.0+4257		fsrq	NA NA	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
	3	4FGL J0510.0+1800		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
	4	4FGL J0449.1+1121	<u> </u>	fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
_	5	4FGL J0719.3+3307		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
	6	4FGL J1124.0+2336		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
	7	4FGL J0833.9+4223		fsrq	LSP	featureless	fsrq	Foschini, Luigi 2021	2021Univ7372F
	9	4FGL J0509.4+1012 4FGL J0217.8+0144		fsrq	LSP	featureless featureless	fsrq fsrq	Foschini, Luigi 2021 Foschini, Luigi 2021	2021Univ7372F 2021Univ7372F
	10	4FGL J0522.9-3628	•	fsrq 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			BL Lac	FSRQ	Álvarez Crespo, N 2016	2016AJ15132A
	1		SDSS J211354.71+112125.3			FSRQ	without BELs	Pasham2019	2019RNAAS392P
	1+	4FGL J2202.7+4216	AT2019evq	la II	LCD	FSRQ	without BELs FSRQ	Pasham2019	2019RNAAS392P
	1	4FGL J1422.3+3223	BL Lac B2 1420+32	bll fsrq	LSP LSP	LSP BL Lac FSRQ	BL Lac	Vermeulen et al. 1995 Mishra et al. (2021)	Ruan et al. (2014) 2021ApJ913146M
	1	4FGL J1153.4+4931	4C+29.22 (S4 1150+49)	fsrq	LSP	FSRQ	BL Lacs	Cutini et al. (2014)	2014MNRAS.445.4316C
	•	4FGL J2151.8-3027	PKS 2149-306	fsrq	LSP	Tong	DE Euco	Cutilir et all (2011)	2009A&A496423B
	1	4FGL J0509.4+0542	TXS 0506+056	bll	ISP	ЫI	FSRQ	Padovani et al. (2019)	2019MNRAS.484L.104P
		4FGL J0058.4+3315	1FGL J0058.0+3314	fsrq	LSP	BL Lac	nominal_FSRQ	Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J0923.5+4125	1FGL J0923.2+4121 1FGL J1000.9+2915	fsrq	LSP	BL Lac	nominal_FSRQ	Shaw et al. 2012 Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J1001.1+2911 4FGL J1607.0+1550	1FGL J1000.9+2915 1FGL J1607.1+1552	bll	LSP LSP	BL Lac BL Lac	nominal_FSRQ nominal_FSRQ	Shaw et al. 2012 Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49 doi:10.1088/0004-637X/748/1/49
		4FGL J2032.0+1219	1FGL J2031.5+1219	bll	LSP	BL Lac	nominal FSRO	Shaw et al. 2012 Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J2244.2+4057	1FGL J2243.4+4104	fsrq	LSP	BL Lac	nominal FSRQ	Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J0430.3-2507	1FGL J0430.4-2509	bll	ISP	BL Lac		Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
_		4FGL J0516.7-6207	1FGL J0516.7-6207	bll	LSP	BL Lac		Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J1058.4+0133	1FGL J1058.4+0134	bll	LSP	BL Lac	broad_lines_BLL	Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49
		4FGL J2236.3+2828 4FGL J2315.6-5018	1FGL J2236.2+2828 1FGL J2315.9-5014	fsrq bll	LSP LSP	BL Lac BL Lac	broad lines BLL broad lines BLL	Shaw et al. 2012 Shaw et al. 2012	doi:10.1088/0004-637X/748/1/49 doi:10.1088/0004-637X/748/1/49
		01.02013.0-3010		1011	1201	1	uu_mics_DEL		
	1	4FGL J2345.2-1555	PMN J2345-1555	fsrq	LSP	FSRQ(red)	BL Lac(blue)	Ghisellini et al. 2013	2013MNRAS.432L66G
	1	4FGL J0035.2+1514	RX J0035.2+1515	bll	ISP	ЫI	FSRQ(blue)	Ghisellini et al. 2012	2012MNRAS.425.1371G
	2	4FGL J0537.7-5717	SUMMS J053748-571828	bll	HSP	ЫI	FSRQ(blue)	Ghisellini et al. 2012	2012MNRAS.425.1371G
	3	4FGL J0630.9-2406	CRATES J0630-2406	bll	HSP	ы	FSRQ(blue)	Ghisellini et al. 2012	2012MNRAS.425.1371G
	4	4FGL J1312.4-2156	CRATES 1312-2156	bll	HSP	ы	FSRQ(blue)	Ghisellini et al. 2012	2012MNRAS.425.1371G
						_			
		FGL_Name	ASSOC_name	4FGL_Class	4FGL_SED_Class	From	То	reference	ADS
_	1	4FGL J0114.8+1326	GB6 J0114+1325	bll	ISP	4FGL J0114.8+	1bzb/2bzq/3CB/4	Fan2022	2022ApJ9354Z
_	2	4FGL J0203.7+3042	NVSS J020344+304238	bll	LSP		1agu/ 2bzq/3CB/4		2022ApJ9354Z
_			TXS 0404+075	bll	LSP	4FGL J0407.5+	1bzq/2bzq/3CB/ 4	Fan2022	2022ApJ9354Z
	3	4FGL J0407.5+0741		1.11	LICD		111 (01- '00	F0000	20224-1 025 47
_		4FGL J0407.5+0741 4FGL J0433.1+3227 4FGL J1058.4+0133	NVSS J043307+322840 4C +01.28	bll bll	HSP LSP	4FGL J0433.1+	1bzq/2bzq/3BCU/ 1bzq/2bzb/3CB/4		2022ApJ9354Z 2022ApJ9354Z