



THE TEGEV CATALOGUE @ SSDC AND THE MWL APPROACH

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A. Lamastra, L.A. Antonelli, A. Carosi

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INAF - Astr. Obs. of Rome





OUTLINE



- The MWL environment of the ASI-SSDC
- The SSDC Multi-Mission Interactive Archive (MMIA)
- The SSDC resident catalogues
- The TeGeV Catalogue @ SSDC
- Summary and outlook



THE ASI-SSDC MWL EXPERIENCE



- The ASI-SSDC (former ASDC):
 - wide experience as MWL data center, both for low-level data products (AGILE data center, Fermi-LAT/SWIFT/... data mirror center) and high-level data, data products and catalogs (GAIA, AGILE, FERMI-LAT, ...).
 - Data and data products integrated in a fully MWL environment (MMIA: Multi-Mission Interactive Archive).
 - Possibility to perform cross-catalog searches between resident and external catalogs.
 - Powerful tools to extract SED of sources and modelization.
 - Catalog of VHE sources from current detector already integrated in the TeGeV Catalogue.



THE SSDC WEB PORTAL





THE SSDC WEB PORTAL



SSDC
SPACE SCIENCE DATA CENTER

Space Science Data Center

agenzia spaziale italiana

Home About SSDC Public Outreach Quick Look **Missions** Multimission Archive Catalogs Tools Links Bibliographic services Helpdesk

Privacy

MISSIONS WEB PAGES
(AGILE, FERMI, SWIFT,
NUSTAR, ...)

AGILE SWIFT FERMI
NUSTAR AMS-02 PLANCK
SOLAR SYSTEM PAMELA GAIA
HERSCHEL BEppo SAX SIMBOL X
CHEOPS EUCLID PLATO

SED³ BUILDER SKY EXPLORER MATISSE GAIA PORTAL COSMIC RAY DATABASE SSDC MULTIMISSION ARCHIVE FOR SPACE SCIENCE SSDC CATALOGS BIBLIOGRAPHY TOOL NEWSLETTER

MEDIA **TOP NEWS** **EVENTS**



THE SSDC WEB PORTAL





THE SSDC WEB PORTAL





THE SSDC MULTI-MISSION INTERACTIVE ARCHIVE (MMIA)



THE SSDC WEB PORTAL





THE MULTI-MISSION INTERACTIVE ARCHIVE



Space Science Data Center

Home
About SSDC
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Bibliographic services
Helpdesk

Multi-Mission Interactive Archive for Space Science
Astrophysics/Cosmology

Astrophysics/Cosmology

Exploration of the Solar System

Particle Astrophysics Cosmic rays

Atmospheric Physics TGF

all missions

Radio-Micro wave

- Planck

IR-Optic-UV

- Herschel
- Swift-UVOT

X ray

- ASCA
- BeppoSAX
- Einstein
- Exosat
- NuSTAR
- ROSAT
- Swift-XRT

Gamma ray

- Agile
- Agile-LV3
- Egret
- Fermi
- Swift-BAT

all missions

- Rosetta
- Dawn
- Chang'E 1
- Chang'E 2
- Messenger

all missions

- Pamela
- AMS-02
- AMS-01
- Fermi-LAT
- CREAM
- BESS-Polar I
- BESS-Polar II
- TS93
- Chang'E 1 (soon available)
- Chang'E 2 (soon available)

all missions

- Agile

Spectral band (): from to

[1.00e-8 keV -- 1.00e+9 keV]

Sensitivity (mCrab):

[1.00e+3 mCrab]

Temporal range (Year): from to

[1975 -- 2017]

Source name: **Name Resolver:** SSDC Name Server SIMBAD NED

10



THE MULTI-MISSION INTERACTIVE ARCHIVE



The screenshot shows the Space Science Data Center (SSDC) website interface. At the top, there is a navigation menu with links: Home, About SSDC, Public Outreach, Quick Look, Missions, Multimission Archive, Catalogs, Tools, Links, Bibliographic services, and Helpdesk. Below the navigation is a banner for the "Multi-Mission Interactive Archive for Space Science Astrophysics/Cosmology".

The main content area is divided into four columns of mission filters:

- Astrophysics/Cosmology** (Red header):
 - all missions
 - Radio-Micro wave
 - Planck
 - IR-Optic-UV
 - Herschel
 - Swift-UVOT
 - X ray
 - ASCA
 - BeppoSAX
 - Einstein
 - Exosat
 - NuSTAR
 - ROSAT
 - Swift-XRT
 - Gamma ray
 - Agile
 - Agile-LV3
 - Egret
 - Fermi
 - Swift-BAT
- Exploration of the Solar System** (Blue header):
 - all missions
 - Rosetta
 - Dawn
 - Chang'E 1
 - Chang'E 2
 - Messenger
- Particle Astrophysics Cosmic rays** (Blue header):
 - all missions
 - Pamela
 - AMS-02
 - AMS-01
 - Fermi-LAT
 - CREAM
 - BESS-Polar I
 - BESS-Polar II
 - TS93
 - Chang'E 1 (soon available)
 - Chang'E 2 (soon available)
- Atmospheric Physics TGF** (Blue header):
 - all missions
 - Agile

Below the filters is a search form with the following fields:

- Spectral band** (Energy (keV)): from $1e-8$ to $1e9$ [1.00e-8 keV -- 1.00e+9 keV]
- Sensitivity (mCrab)**: $1e3$ [1.00e+3 mCrab]
- Temporal range (Year)**: from 1975 to 2017 [1975 -- 2017]
- Submit** button

At the bottom, there is a **Source name** field with a placeholder "Type name and wait for name resolver" and a **Name Resolver** section with checked options: SSDC Name Server, SIMBAD, and NED.

A red arrow points to the "Source name" field, which is circled in red.

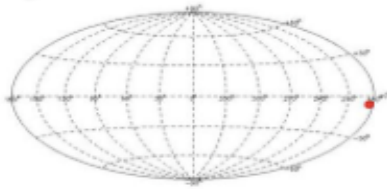


THE MULTI-MISSION INTERACTIVE ARCHIVE



Multi-Mission Interactive Archive

Query results for: **CRAB**
RA = **83.63297** (deg); DEC = **22.014434** (deg); EQUINOX = 2000
Source name resolved by **SSDC**



Source Names

Bibliographic search ?

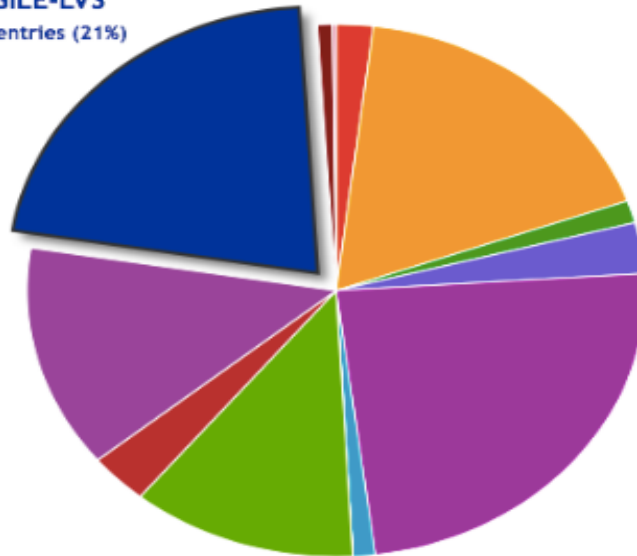
PKS0531+219 ?

in time range between 1900 and 2017

By name via NED

By coordinates via ADS

AGILE-LV3
111 entries (21%)



MISSION	ENTRIES
PLANCK	0
HERSCHEL	10
SWIFT	91
ASCA	7
BeppoSax NFI	16
BeppoSax WFC	124
EINSTEIN	6
EXOSAT	0
NUSTAR	61
ROSAT	16
AGILE	70
AGILE-LV3	111
EGRET	4
FERMI	1



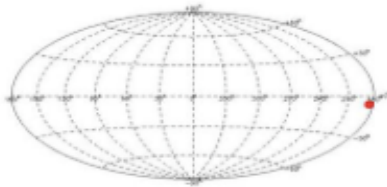
THE MULTI-MISSION INTERACTIVE ARCHIVE



Multi-Mission Interactive Archive

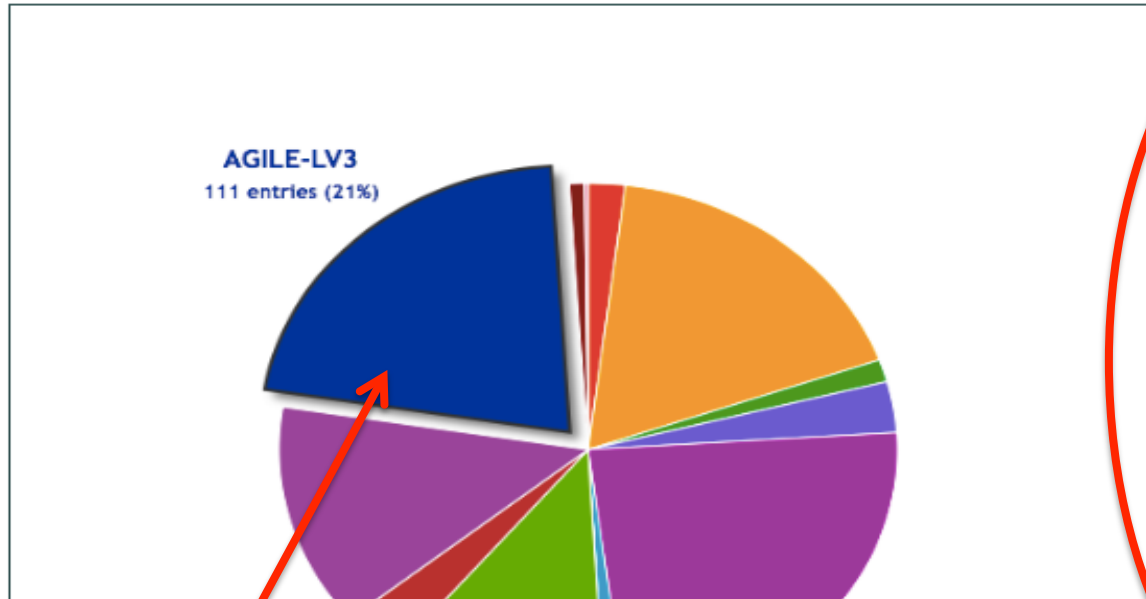
Query results for: **CRAB**
RA = **83.632977** (deg); DEC = **22.014434** (deg);
Source name resolved by **ASDC**

Summary of the observations on the Crab position considering all the data available @ SSDC



Source Names

PKS0531+219
in time range between 1900 and 2017
By name via NED
By coordinates via ADS



MISSION	ENTRIES
PLANCK	0
HERSCHEL	10
SWIFT	91
ASCA	7
BeppoSax NFI	16
BeppoSax WFC	124
EINSTEIN	6
EXOSAT	0
NUSTAR	61
ROSAT	16
AGILE	70
AGILE-LV3	111
EGRET	4
FERMI	1

Clicking on each of the “piece of cake” you have access to the corresponding data and interactive data analysis



THE SSDC RESIDENT CATALOGUES



ALL SSDC CATALOGUES



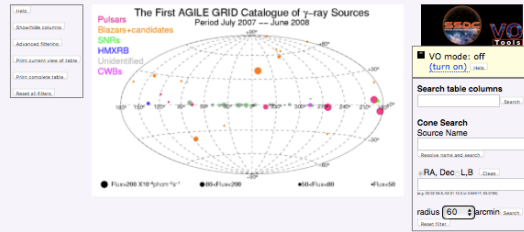
The screenshot shows the homepage of the Space Science Data Center. The main navigation bar includes links for Home, About SSDC, Public Outreach, Quick Look, Missions, Multimission Archive, **Catalogs**, Tools, Links, Bibliographic services, and Helpdesk. The 'Catalogs' link is circled in white, with an arrow pointing to a text box that reads 'MWL CATALOGS (X-RAY, HE, VHE, ...)'. Below the navigation bar is a large image of a satellite and a galaxy. To the right is a grid of mission icons including AGILE, SWIFT, FERMI, MUSTAR, AMS-02, PLANCK, GAIA, HERSCHEL, BEppo, SAX, SIMBOL X, CHEOPS, EUCLID, and PLATO. At the bottom, there are three sections: MEDIA (SED BUILDER, SKY EXPLORER, MATISSE), TOP NEWS (GAIA PORTAL, COSMIC RAY DATABASE, SSDC MULTIMISSION ARCHIVE FOR SPACE SCIENCE), and EVENTS (SSDC CATALOGS, BIBLIOGRAPHY TOOL, NEWSLETTER).



ACCESS TO SSDC MISSION CATALOGS



The First AGILE-GRID Catalog of High Confidence Gamma-Ray Sources



C. Pittori, F. Verrecchia, A. Chen, A. Bulgarelli, A. Pellizzoni, A. Giuliani, S. Vercellone, F. Longo, M. Tavani, P. Giommi et al.

AAJ 596, 1563-1574 (2009)
 The First AGILE Catalog includes sources detected by using AGILE-GRID data from July 9, 2007. Users can also download the First AGILE Catalog. Refined analysis of complex regions of the Galactic plane yielded a new list of 47 high-confidence sources. Previous preliminary versions were published on this webpage to allow AGILE AO2 guest observations. If the AGILE Catalog data are used in publications, please acknowledge the authors. We acknowledge the use of the First AGILE Catalog of High Confidence Gamma-ray sources and on-line version available from the ADC v1.0.

Talk/poster by S. Ciprini



The Fermi LAT Third Source Catalog (3FGL)

@ SSDC v16

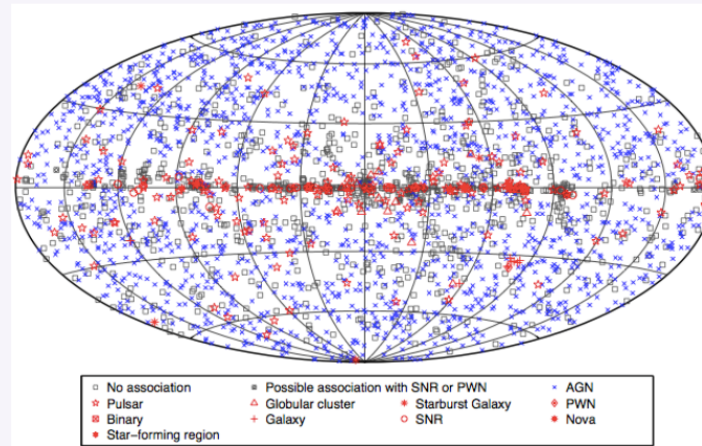
Export Current view of Table in: [Latex format](#) / [FITS format](#) / [Raw text format](#) / [CSV text format](#) / [Browse table](#)

Previous Page Next Page Page Size (# of lines) This view includes 47 entries

MMC	AGILE Name	RA (J2000) (hh mm ss.d)	Dec (J2000) (dd mm ss.d)	LII (degrees)	BII (degrees)	Position Error 95% (deg)	sqr(TS)	E
1AGL J0006+7311	00 06 34.2	+73 11 06.68	119.65	10.6	0.63	5.1		
1AGL J0242+6111	02 42 13.6	+61 11 06.79	135.88	1.13	0.64	5.3		
1AGL J0535+2205	05 35 05.99	+22 05 41.71	184.56	-5.63	0.09	47.2		
1AGL J0538-4424	05 38 29.69	-44 24 17.89	250.44	-31.2	0.5	5.9		



Talk by F. Verrecchia



This is an interactive version of the Fermi-LAT 4 years Source Catalog extracted from arXiv:1501.02003

The same table is available in a different format (but same content) at the Fermi Science Support Center @ NASA-GSFC

Column descriptions for the LAT 4-year Point Source Catalog are provided in Appendix B of the paper

All All AGNs BL Lacs FSRQs BCU Pulsars Binaries & Novae

SNR, PWN, SFR GLC Galaxy & Starburst NLSY1 SSRQ/CSS Unassociated

Export Current view of Table in: [Latex format](#) / [FITS format](#) / [Raw text format](#) / [CSV text format](#) / [Browse table](#)



MULTI-BAND AND MULTI-FREQUENCY CAT.

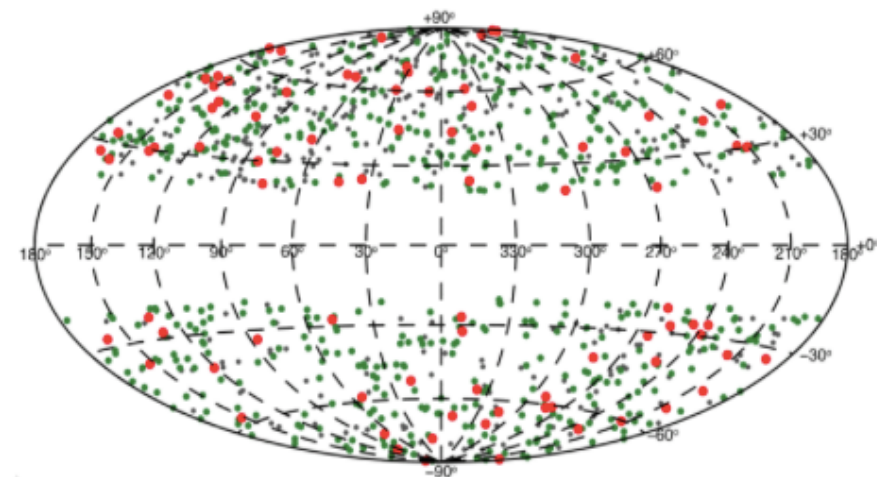


SSDC catalogs
On-line interactive version of catalogs produced at SSDC or with the contribution of SSDC staff

Cross-search SSDC catalogs

VHE Gamma-Ray X-Ray UV-optical-NIR Radio-Microwave Multi-frequency Non Astronomical All SSDC catalogs

1WHSP



- **TeV** - The TeV Catalogue @ SSDC is a catalogue of VHE sources observed by ground-based Cherenkov telescopes.
- **1WHSP** - 1WHSP: an IR-based sample of ~1000 VHE gamma-ray blazars candidates (Arsioli, Fraga et al. 2015 A&A 579, 34)
- **2WHSP** - The 2WHSP catalog of HSP blazars (Chang, Arsioli et al. 2016. A&A, in press, ArXiv:1609.05808)



MULTI-BAND AND MULTI-FREQUENCY CAT.

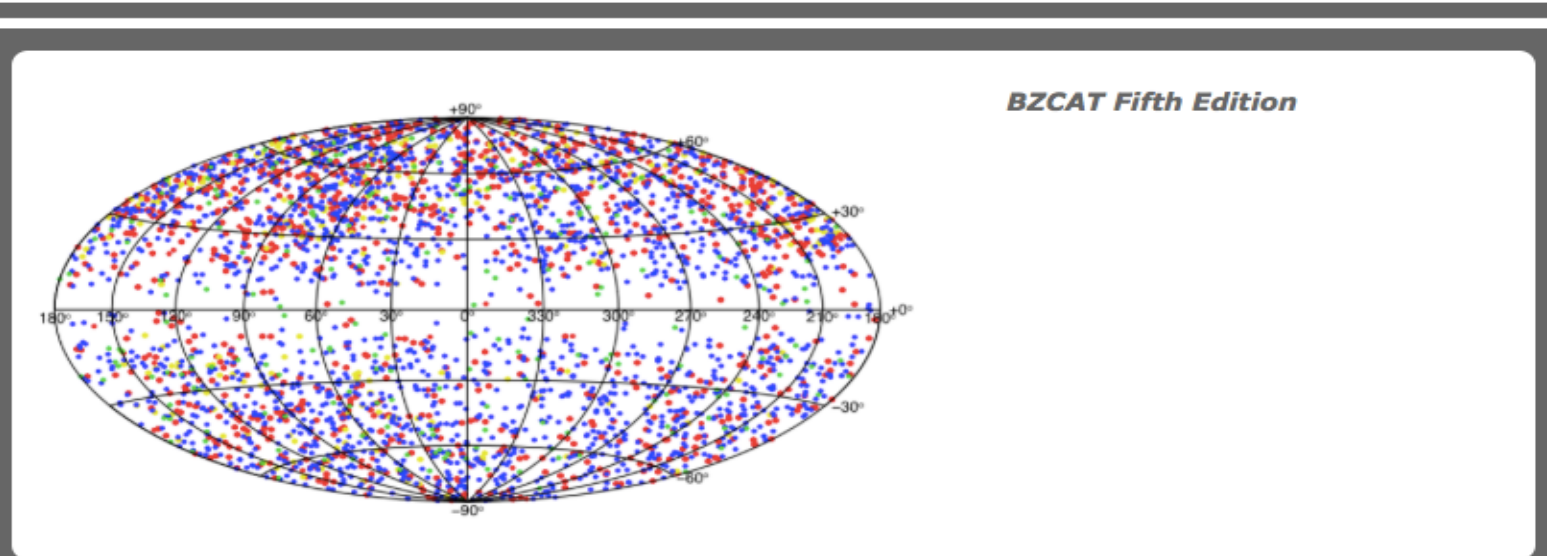


SSDC catalogs

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Cross-search SSDC catalogs

VHE Gamma-Ray X-Ray UV-optical-NIR Radio-Microwave Multi-frequency Non Astronomical All SSDC catalogs



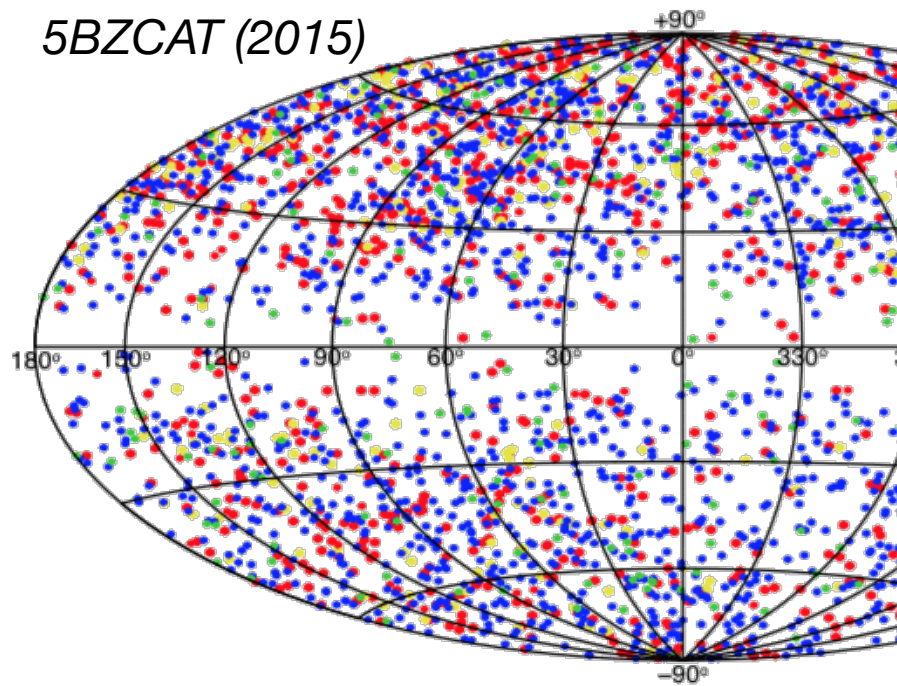
- **BZCAT Fifth Edition** - Multi-frequency Catalogue of Blazars - E. Massaro, A. Maselli, C. Leto, P. Marchegiani, M. Perri, P. Giommi, S. Piranomonte (ARACNE editrice)
- **1WHSP** - 1WHSP: an IR-based sample of ~1000 VHE gamma-ray blazars candidates (Arsioli, Fraga et al. 2015 A&A 579, 34)
- **2WHSP** - The 2WHSP catalog of HSP blazars (Chang, Arsioli et al. 2016. A&A, in press, ArXiv:1609.05808)
- **BZCAT Fourth Edition** - Multi-frequency Catalogue of Blazars - E. Massaro, P. Giommi, C. Leto, P. Marchegiani, A. Maselli, M. Perri S. Piranomonte and S. Sclavi, A&A, 495, 691
- **Sedentary survey** - The Sedentary Multi-frequency Survey - Giommi, Piranomonte, Perri & Padovani 2005, A&A, 434, 385
- **ROXA** - The Radio Optical X-ray SSDC (ROXA) blazar sample - Turriziani, Cavazzuti & Giommi 2007, A&A, 472, 699



BLAZARS CATALOG @ SSSC



5BZCAT (2015)



>3500 Blazars AGNs



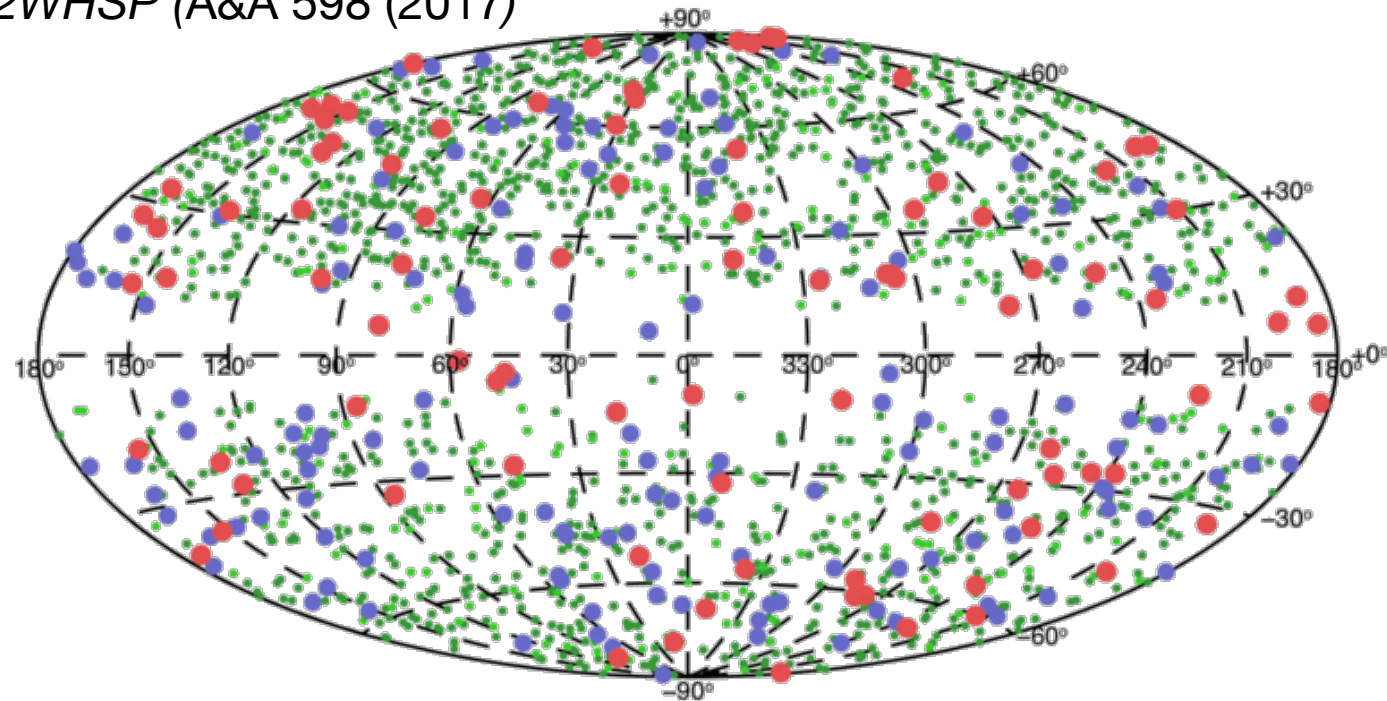
Multi-frequency catalog of blazars. Blazar selection criteria based on SED and evidence for relativistic beaming. Catalog frequently updated (5th edition in 2015). Fully integrated in the MWL SSSC environment.



BLAZAR CATALOGS



2WHSP (A&A 598 (2017))



~1700 HSP blazars

Catalog of selected High-synchrotron peak (HSP) BL Lac blazars. Cross-matched MWL radio (NVSS, FIRST, ...)/IR (WISE)/X-Ray surveys and applied selection criteria based on the radio-to-IR and IR-to-X-ray spectral slopes. Examined the SED of each individual candidate.



THE TEGEV CATALOGUE



GOAL



- SSCDC access catalogue dedicated to the TeV γ -ray Astronomy.
- List (almost) all TeV detections published on referred papers or newly announced to conferences or through Astronomer's Telegrams.
- Future integrate in the SSCDC MWL environment.
- Testbed for a future Cherenkov Telescope Array source catalogue within a MWL framework.

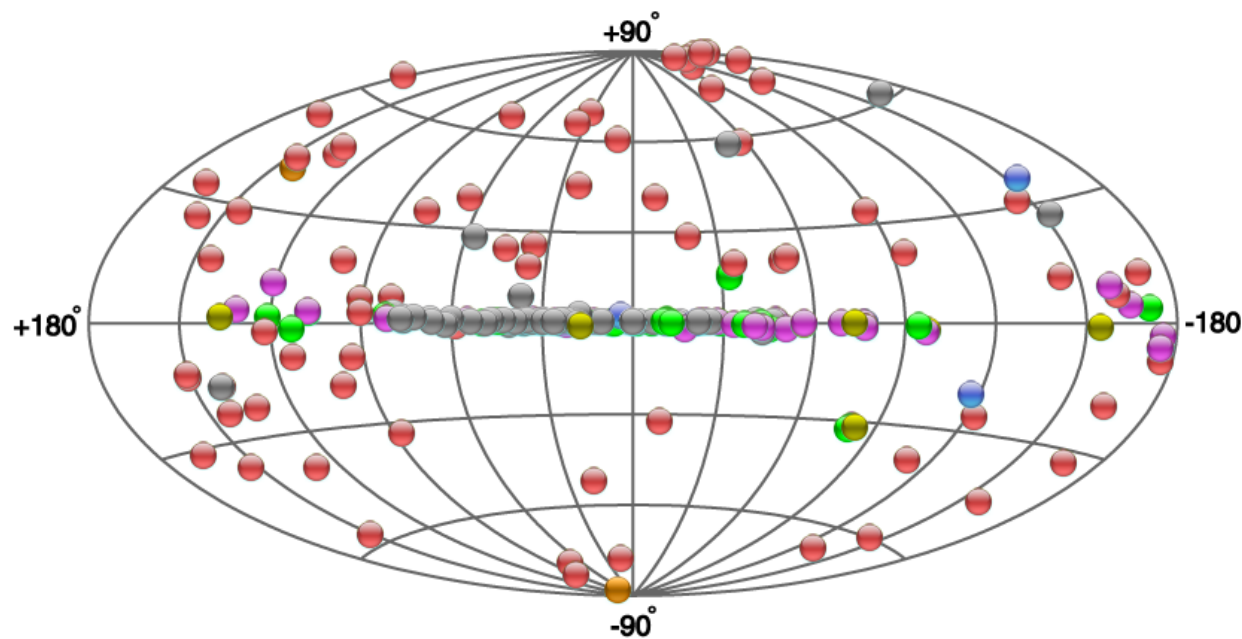


THE TEVCAT CATALOGUE



Main reference online catalogue for TeV astronomy: TeVCat

<http://tevcat.uchicago.edu/>



Source Types

- Extended TeV Halo PWN
- Binary XRB PSR Gamma BIN
- HBL IBL FRI FSRQ
Blazar LBL AGN
(unknown type)
- Shell SNR/Molec. Cloud
Composite SNR
Superbubble
- Starburst
- DARK UNID Other
- uQuasar Star Forming
Region Globular Cluster
Cat. Var. Massive Star
Cluster BIN BL Lac
(class unclear) WR



WHY ANOTHER TEV CATALOGUE?



SSDC added values:

- Multi-yrs experience in HE astronomy catalogues.
- Unique interfaces between the archive and MWL on-line archives integrated into the VO.
- Linked to the SSCDC tools (Data Explorer, SED Builder, ...).
- Technical and s/w engineering support by industry.

+

In CTA view, useful exercise to integrate final data scientific products from existing Cherenkov experiments in a public MWL web interface.



BUILDING THE CATALOGUE ...



- For each confirmed TeV source, review the bib. references to get the main observational quantities (centroid position, norm. flux, spectral index ...) related to that specific observations. Source candidates are excluded.
- Include existing public high-level data products (from MAGIC, HESS, VERITAS, ...).

Available online @:

www.ssdsc.asi.it/tgevcat/



THE TEGEV CATALOG @ SSDC



The TeGeV Catalogue
@ SSDC (v3, May 2018)

Help

Show/hide columns

Advanced filtering

Print current view of table

Print complete table

Reset all filters

VO mode: off (turn on)

Search table columns

Search

Cone Search

Source Name

Resolve name and search

RA, Dec LB

Entry number	MMC	LIGHT CURVE	TEV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]
Selection mode: <input type="button" value="Include"/> <input checked="" type="checkbox"/> All		<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="↑"/> <input type="button" value="↓"/> Stats	<input type="button" value="↑"/> <input type="button" value="↓"/> Stats
1 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0006+7259	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-
2 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0013-1853	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310
3 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0025+6410	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000
4 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-
5 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0035+5947	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150
6 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0047-2517	2 ▶	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190
7 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0136+3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-
8 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300
9 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0205+6451	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000
10 <input checked="" type="checkbox"/> <input type="button" value="Select"/>	SSDC Data Explorer <input type="button" value="Cross-search SSDC catalogs"/>	-	TeV J0221+3556	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 13.7	-	100



THE TEGEV CATALOG @ SSDC



The TeGeV Catalogue
@ SSDC (v3, May 2018)

Help

Show/hide columns

Advanced filtering

Print current view of table

Print complete table

Reset all filters

Access to VO Tools

Authors: A. Carosi, F. Lucrelli, L.A. Antonelli, A. Lamastra

ue of VHE sources observed by ground-based Cherenkov telescopes. The TeGeVcat is collecting all the information publicly available about TeV sources observed by the
lescopes. The catalogue contains also public light curves from the major Cherenkov experiments. For a full description of the parameters shown in the catalogue, please

HBL IBL LBL FSRQs AGN STARBURST FRI SNR/PWN XRB WR UNID ALL

Export Current view of Table in: [Latex format](#) [FITS format](#) [Raw text format](#) [CSV text format](#) [Browse table](#)



THE TEGEV CATALOG @ SSDC



The TeGeV Catalogue

@ SSDC (v3, May 2018)

Help

Show/hide columns

Advanced filtering

Print current view of table

Print complete table

Reset all filters

VO mode: off (turn on)

Help

Search table columns

Search

Cone Search

Source Name

Resolve name and search

RA, Dec L, B

(e.g. 00 02 34.6, -53 01 10.2 or 0.64417, -53.0195)

radius arcmin Search

Cone search within the cat.

Authors: A. Carosi, F. Lucarelli, L.A. Antonelli, A. Lamastra

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HBL
IBL
LBL
FSRQs
AGN
STARBURST
FRI
SNR/PWN
XRB
WR
UNID
ALL

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THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TeV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm ² /s	z	hh mm ss		dd mm ss
1	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0006+7259	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0013-1853	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0025+6410	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0035+5947	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0047-2517	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0136+3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0205+6451	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0221+3556	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0222+4302	2	3C 66A	IBL	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0223+4259	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0232+2016	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer Cross-search SSDC catalogs	Show	TeV J0240+6115	6	LSI +61_303	XRB	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer Cross-search SSDC catalogs	Show	TeV J0303-2407	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer Cross-search SSDC catalogs	Show	TeV J0316+4119	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0319+1845	1	RBS 0413/ EXO 0317.0+1834/1E 0317.0+1835	HBL	03 19 47	+18 45 42	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer Cross-search SSDC catalogs	-	TeV J0319+4130	1	NGC 1275	FRI	03 19 48.1	+41 30 42.1	13	100	0.0179	MAGIC	55409



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TeV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm2/s	z	hh mm ss		dd mm ss
1	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0006+7259	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0013-1853	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0025+6410	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0035+5947	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0047-2517	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0136+3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0205+6451	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0221+3556	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0222+4302	2	3C 66A	IBL	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0223+4259	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0232+2016	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0240+6115	6	LSI +61_303	XRB	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0303-2407	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0317+4130	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0319+4811	1	VERITAS J0319+4811	HBL	03 19 47	+18 45 42	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	TeV J0319+4811	1	MAGIC J0319+4811	HBL	03 19 48.1	+41 30 42.1	13	100	0.0179	MAGIC	55409

TeV name assigned according to RA,DEC position



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TEV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm2/s	z	hh mm ss		dd mm ss
1	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0006+259	1	CTA 1/ G 119.5+10.2	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0013-1853	1	SHBL J001355.9-185406	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0025+6410	1	Tycho SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0035+5947	1	1ES 0033+595	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0047-2517	2	NGC 253	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0136-3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0205+4451	1	3C 58	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0221+4556	1	S3 0218+35/ B2 0218+35	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0222+4302	2	3C 66A	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0223+4059	1	MAGIC J0223+403/ 3C 66B	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0232+2016	1	1ES 0229+200	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0240+6117	6	LSI +61_303	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0303-2407	1	PKS 0301-243/ RBS 0383	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0316+4119	1	MAGIC J0317+413/ IC 310	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0319+1835	1	3C 66A	03 19 47	+18 45 42	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0319+4811	1	3C 66A	03 19 48.1	+41 30 42.1	13	100	0.0179	MAGIC	55409

Multiple observations



THE TEGEVCAT MAIN TABLE



Entry number	Selection mode: Include <input checked="" type="checkbox"/> All	SSDC Data Explorer	MMC	LIGHT CURVE	TeV NAME	# OBS	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
									hh mm ss	dd mm ss	x E-12 cm2/s	z	hh mm ss		dd mm ss
1	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0006+7259	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0013-1853	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0025+6410	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0035+5947	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0047-2517	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0136+3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0205+6451	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0221+3556	1	S3 0218+35/ B2 0218+35	Bazar	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0222+4302	2	3C 66A	IBL	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0223+4259	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0232+2016	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0240+6115	6	LSI +61_303	XRB	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0303-2407	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0316+4119	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0317+413	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
18	<input checked="" type="checkbox"/> Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0317+413	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
											1.5	250	0.190	VERITAS	54732
											13	100	0.0179	MAGIC	55409

Canonical name and/or TeV name (source candidate for UNID source)



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TEV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance [z]	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-2 cm2/s				
1	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0006+7259	1	CTA 1/ G 119.5+10.2	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0013-1853	1	SHBL J001355.9-185406	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0025+6410	1	Tycho SNR	00 25 27.0	+64 10 50	0.18	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0033-1921	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0035+5947	1	1ES 0033+595	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0047-2517	2	NGC 253	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0136+3905	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0152+0146	1	RGB J0152+017/RXJ0152.6+0147	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0205+6451	1	3C 58	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0221+3556	1	S3 0218+35/ B2 0218+35	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0222+4302	2	3C 66A	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0223+4259	1	MAGIC J0223+403/ 3C 66B	02 23 11.4	+42 59 31.4	7.8	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0232+2016	1	1ES 0229+200	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0240+6115	6	LSI +61_303	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0303-2407	1	PKS 0301-243/ RBS 0383	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0316+4119	1	MAGIC J0317+413/ IC 310	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0319+1845	1	RBS 0413/ EXO 0317.0+1834/1E 0317.0+1835	03 19 47	+18 45 22	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0319+4130	1	NGC 1275	03 19 48.2	+41 30 43.1	13	100	0.0179	MAGIC	55409

TeV best-fit position



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TeV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance [z]	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm ² /s				
1	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	SHBL J00135.9-185406	HBL	00 13 52.0	-18 53 29	0.83	300	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0033+595	HBL	00 35 16.8	+59 47 4.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 39.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+1 46 0.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 12.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	3C 66A	IBL	02 22 39.6	+41 02 07.8	45	700	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	Show	6	LSI +61_303	XRB	02 40 34	+61 15 5	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RBS 0413/ EXO 0317.0+1834/1E 0317.0+1835	HBL	03 16 47	+18 15 15	3.5	350	0.189	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	NGC 1275	PWN	03 17 41	+35 07 41	1.2	300	0.0001	MAGIC	55409

Integral Flux above threshold energy



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TeV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm ² /s	z	hh mm ss		dd mm ss
1	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	3C 66A	IBL	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	Show	6	LSI +61_303	XRB	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RBS 0413/ EXO 0317.0+1834/1E 0317.0+1835	HBL	03 19 47	+18 45 42	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	NGC 1275	FRI	03 19 48.1	+41 30 42.1	13	100	0.0179	MAGIC	55409

Light curves from public data products (MAGIC, HESS, VERITAS, ...)



THE TEGEVCAT MAIN TABLE



Entry number	MMC	LIGHT CURVE	TEV NAME	# OBS.	OTHER NAMES	TYPE	RA (J2000)	Dec (J2000)	INTEGRAL FLUX	THR ENERGY [GeV]	Distance	Observatory	START TIME [MJD]
							hh mm ss	dd mm ss	x E-12 cm ² /s	z	hh mm ss		dd mm ss
1	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	CTA 1/ G 119.5+10.2	PWN/SNR	00 06 26	+72 59 01	-	-	-	VERITAS	55440
2	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	SHBL J001355.9-185406	HBL	00 13 52.0	-18 53 29	0.83	310	0.095	HESS	54653
3	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	Tycho SNR	SNR	00 25 27.0	+64 10 50	0.187	1000	-	VERITAS	54740
4	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	KUV 00311-1938/RBS 0076/1RXS J003334.6-192130	HBL	00 33 34.2	-19 21 33.3	-	-	0.61	HESS	-
5	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0033+595	HBL	00 35 16.8	+59 47 24.0	7.1	150	-	MAGIC	55060
6	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	NGC 253	Starburst	00 47 34.3	-25 17 22.6	0.56	190	0.000811	HESS	53371
7	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0136+391/B3 0133+388/1RXS J013632.9+390556	HBL	01 36 32.5	+39 05 59.6	-	-	-	MAGIC	-
8	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RGB J0152+017/RXJ0152.6+0147	HBL	01 52 33.5	+01 46 40.3	2.7	300	0.08	HESS	54404
9	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	3C 58	PWN	02 05 31	+64 51 00	0.14	1000	-	MAGIC	56508
10	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	S3 0218+35/ B2 0218+35	Blazar	02 21 05.5	+35 56 13.7	-	100	0.944	MAGIC	56861
11	SSDC Data Explorer	Cross-search SSDC catalogs	-	2	3C 66A	IBL	02 22 39.6	+43 02 07.8	45	100	0.444	MAGIC	55170
12	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	MAGIC J0223+403/ 3C 66B	UNID	02 23 11.4	+42 59 31.4	7.3	150	-	MAGIC	54313
13	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	1ES 0229+200	HBL	02 32 53.2	+20 16 21	0.94	580	0.14	HESS	53614
14	SSDC Data Explorer	Cross-search SSDC catalogs	Show	6	LSI +61_303	XRB	02 40 34	+61 15 25	2.2	400	-	MAGIC	53644
15	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	PKS 0301-243/ RBS 0383	HBL	03 03 23.49	-24 07 35.86	3.3	200	0.266	HESS	55044
16	SSDC Data Explorer	Cross-search SSDC catalogs	Show	1	MAGIC J0317+413/ IC 310	AGN	03 16 43.0	+41 19 29	3.1	300	0.0189	MAGIC	55105
17	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	RBS 0413/ EXO 0317.0+1834/1E 0317.0+1835	HBL	03 19 47	+18 45 42	1.5	250	0.190	VERITAS	54732
18	SSDC Data Explorer	Cross-search SSDC catalogs	-	1	NGC 1275	FRI	03 19 48.1	+41 30 42.1	13	100	0.0179	MAGIC	55409

Possibility to export the table in CSV, LaTeX, ASCII, format

164	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0854+2006	1	OJ287/DCR 10854+201/DKS	06 31	18
165	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0238-3116	1		6 58	-
166	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1159+2914	1	T	9 14 83	150
167	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1145+1936	1		86 23	1.3
168	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0509+0541	1		5 41 33	-

Choice of column that can be displayed:

- TEGEVNAME
- # OBS.
- OTHER NAMES
- TYPE
- RA (J2000)
- Dec (J2000)
- ErrRaStat
- ErrRaSys
- ErrDecStat
- ErrDecSys
- EXTENDED
- SEMIMAJOR
- ERRMAJOR
- SEMIMINOR
- ERRMINOR
- ROTATION ANGLE
- NORMALIZATION
- ERRNORMSTAT
- ERRNORMSYS
- SPECTRAL SLOPE
- ERRSLOPESTAT
- ERRSLOPESYS
- FLUX [x 10⁻¹² cm⁻² s⁻¹]
- ErrFluxStat [x 10⁻¹² cm⁻² s⁻¹]
- ErrFluxSys [x 10⁻¹² cm⁻² s⁻¹]
- OTHER SPECTRAL COMPONENTS
- CU [% Crab]
- THR ENERGY [GeV]

◀ Previous Page Next Page ▶ Page Size (# of lines) 50

Export Current view of Table in:

Choice of column that can be displayed:

TEGEVNAME

OBS.

OTHER NAMES

TYPE

RA (J2000)

Dec (J2000)

ErrRaStat

ErrRaSys

ErrDecStat

ErrDecSys

EXTENDED

SEMIMAJOR

ERRMAJOR

SEMIMINOR

ERRMINOR

ROTATION ANGLE

NORMALIZATION

ERRNORMSTAT

ERRNORMSYS

SPECTRAL SLOPE

More parameters to be displayed

164	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J0854+2006	1	OJ287/DCR 10854+2001/DKS	06 31	18
165	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0238-3116	1		6 58	-
166	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1159+2914	1	T	9 14 83	150
167	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1145+1936	1		86 23	1.3
168	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	Show	TeV J0509+0541	1		5 41 33	-

Choice of column that can be displayed:

- TEGEVNAME
- # OBS.
- OTHER NAMES
- TYPE
- RA (J2000)
- Dec (J2000)
- ErrRaStat
- ErrRaSys
- ErrDecStat
- ErrDecSys
- EXTENDED

- MIN ZENITH
- MAX ZENITH
- MEAN ZENITH
- DISTANCE [kPc]
- Redshift
- Discoverer
- Observatory
- START OBSERVATION [MJD]
- END OBSERVATION [MJD]
- EXPOSURE TIME [ksec]
- SPECTRUM
- FILE_SP
- LIGHT CURVE
- FILE_LC
- COMMENTS
- Select/Deselect all

Update Table Columns Help

Choice of column that can be displayed:

- TEGEVNAME
- # OBS.

More parameters to be displayed

- ErrDecStat
- ErrDecSys
- EXTENDED
- SEMIMAJOR
- ERRMAJOR
- SEMIMINOR
- ERRMINOR
- ROTATION ANGLE
- NORMALIZATION
- ERRNORMSTAT
- ERRNORMSYS
- SPECTRAL SLOPE



LINK TO SSDC MWL TOOLS



134 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1912+1009	1	HESS J1912+101/ PSR J1913+1011	PWN
135 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1922+1411	4 ▶	HESS J1923+141/ W 51C/ G49.2-0.7	SNR
136 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1930+1852	1	VER J1930+188/ G 54.1+0.3/ PSR J1930+1852	PWN,
137 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1943+2118	1	HESS J1943+213	HE
138 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1959+6508	3 ▶	1ES 1959+650	HE
139 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2001+4353	1	MAGIC J2001+435	IE
140 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2009- 4849	2 ▶	PKS 2005-489	HE
141 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2016+3711	1	VER J2016+371/ CTB 87	PWN,
142 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2018+3642	4 ▶	MGRO J2019+37	PWN/



LINK TO SSDC MWL TOOLS



134 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1912+1009	1	HESS J1912+101/ PSR J1913+1011	PV
135 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1922+1411	4 ▶	HESS J1923+141/ W 51C/ G49.2-0.7	SNR
136 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1930+1852	1	VER J1930+188/ G 54.1+0.3/ PSR J1930+1852	PWN,
137 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1943+2118	1	HESS J1943+213	HI
138 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1959+6508	3 ▶	1ES 1959+650	HI
139 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2001+4353	1	MAGIC J2001+435	IE
140 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2009- 4849	2 ▶	PKS 2005-489	HI
141 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2016+3711	1	VER J2016+371/ CTB 87	PWN,
142 <input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2018+3642	4 ▶	MGRO J2019+37	PWN/



LINK TO SSDC MWL TOOLS



134	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1912+1009	1	HESS J1912+101/ PSR J1913+1011	PV
135	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1922+1411	4 ▶	HESS J1923+141/ W 51C/ G49.2-0.7	SNR
136	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1930+1852	1	VER J1930+188/ G 54.1+0.3/ PSR J1930+1852	PWN,
137	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1943+2118	1	HESS J1943+213	HI
138	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J1959+6508	3 ▶	1ES 1959+650	HI
139	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2001+4353	1	MAGIC J2001+435	IE
140	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2009- 4849	2 ▶	PKS 2005-489	HI
141	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2016+3711	1	VER J2016+371/ CTB 87	PWN,
142	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search SSDC catalogs	-	TeV J2018+3642	4 ▶	MGRO J2019+37	PWN/



LINK TC



Entry TeV J1959+6508

R.A. (J2000) = 19 59 59.9 (299.9996 deg) l=98.00
Dec (J2000) = +65 08 54.7 (65.1485 deg) b=17.67
Galactic nH = 1.00E+21 (cm⁻²)

[Source Names](#)

134	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
135	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
136	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
137	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
138	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
139	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
140	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
141	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
142	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search

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Default catalogs (always selected)

Selectable catalogs:

Default selection [i]

Radio [select]

Infrared [select]

Optical [select]

X-Ray [select]

Gamma [select]

Source Catalogs [select]

[Selected catalog List >>]

size (arcmin)

[Create new image](#)

Position selected for the analysis: R.A.=19 59 59.9 (299.9996 deg) l=98.00
Dec=+65 08 54.7 (65.1485 deg) b=17.67 [SED Builder](#) [Source Names](#)
[Reset Position](#) Galactic nH= 1.00E+21 (cm⁻²)

Additional Services -

SSDC-resident astronomical catalogs

Group of Catalogs Selected Catalogs

Radio IR Optical QORG AGN BZCAT
X-ray Gamma ZCAT NGC ZWICKY

Search radius arcmin

Search Other Services

VIZIER(X-R-G) VIZIER(O-IR) NED
SIMBAD HEASARC(X-R-G)
GSC2 STSCI MAST 2MASS
SDSS USNO-B1.0 NVO

Search radius arcmin

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in time range between
 and
[By name via NED](#)
[By coordinates via ADS](#)

Access to Public Data Archives -

SkyExplorer

AGILE Fermi EGRET

Search radius degrees

Radio-Micro wave
 IR-Optic-UV
 X ray
 Gamma ray

F. Lucarelli – HE Catalogues- Toulouse 2018

42



LINK TC



Entry TeV J1959+6508

R.A. (J2000) = 19 59 59.9 (299.9996 deg) l=98.00
Dec (J2000) = +65 08 54.7 (65.1485 deg) b=17.67
Galactic nH = 1.00E+21 (cm^-2)

[Source Names](#)

134	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search
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142	<input checked="" type="checkbox"/>	Select	SSDC Data Explorer	Cross-search

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Default catalogs (always selected)

Selectable catalogs:

- Default selection [i]
- Radio [select]
- Infrared [select]
- Optical [select]
- X-Ray [select]
- Gamma [select]
- Source Catalogs [select]

[Selected catalog List >>]

size (arcmin)

[Create new image](#)

Position selected for the analysis: R.A.=19 59 59.9 (299.9996 deg) l=98.00
Dec=+65 08 54.7 (65.1485 deg) b=17.67
Galactic nH= 1.00E+21 (cm^-2)

[SED Builder](#) [Source Names](#)

[Reset Position](#)

Additional Services -

SSDC-resident astronomical catalogs

Group of Catalogs Selected Catalogs

Radio IR Optical QORG AGN BZCAT
X-ray Gamma ZCAT NGC ZWICKY

Search radius arcmin

Search Other Services

VIZIER(X-R-G) VIZIER(O-IR) NED
SIMBAD HEASARC(X-R-G)
GSC2 STSCI MAST 2MASS
SDSS USNO-B1.0 NVO

Search radius arcmin

Bibliography search

in time range between
 and

By name via NED
 By coordinates via ADS

Access to Public Data Archives -

Queries to single data archives

Gamma Ray Data

AGILE Fermi EGRET

Search radius degrees

Multiple queries to SSDC data archives

Spectral band [all]

- Radio-Micro wave
- IR-Optic-UV
- X ray
- Gamma ray



LINK TC

Entry TeV J1959+6508

R.A. (J2000) = 19 59 59.9 (299.9996 deg) l=98.00

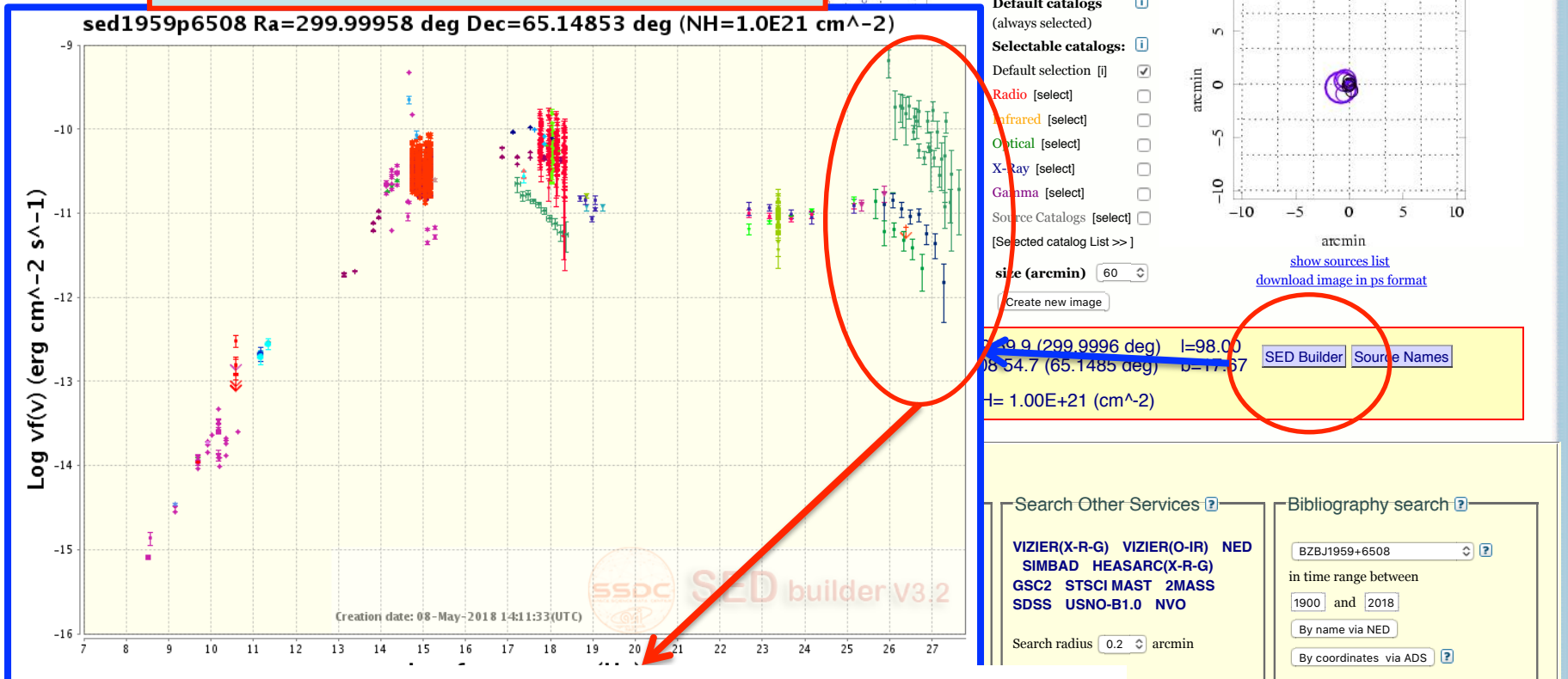
Dec (J2000) = +65 08 54.7 (65.1485 deg) b=17.67

Galactic nH = 1.00E+21 (cm⁻²)

[Source Names](#)

ASTIT

SEDBuilder



Archival data from WHIPPLE, HEGRA, MAGIC, VERITAS

142 Select

SSDC Data Explorer Cross-search

Queries to single data archives: Gamma Ray Data AGILE Fermi EGRET Search radius 50 degrees

Multiple queries to SSDC data archives: Spectral band [all] Radio-Micro wave IR-Optic-UV X ray Gamma ray



HIDDEN TREASURES IN THE TEGEV CATALOGUE



- All main results and scientific interpretation of the VHE gamma-ray sources reported here have been already provided in the correspondent paper ...
- Nevertheless, some of the VHE sources are still unidentified: a first “look nearby” for a candidate counterpart using the SSDC tools and catalogues might help to start their identification.
- The TeGeV catalogue have been also used as input for an extended search for gamma-ray counterparts in the MeV-GeV energy band using the data of the AGILE satellite (see talk by F. Verrecchia).
- Producing SEDs on a source of interest using the SEDBuilder tool and the SSDC archival data is also a very valuable “treasure” for the astronomical community.



SUMMARY AND OUTLOOK



- The TeGeV Catalogue @ SSCDC is an alternative catalogue to the TeVCat.
- Provide several unique features and it is fully integrated in the MWL SSCDC environment.
- The catalogue is maintained, updated and upgraded almost twice per year.
- It can be a reference for a future interactive CTA source catalogue integrated in a MWL environment.
- Further integration of high-level data products (light-curves, spectra, ...) from current TeV detectors (in particular MAGIC) is foreseen in the near future.



STAY TUNED!

www.ssdsc.asi.it/tgevcats/



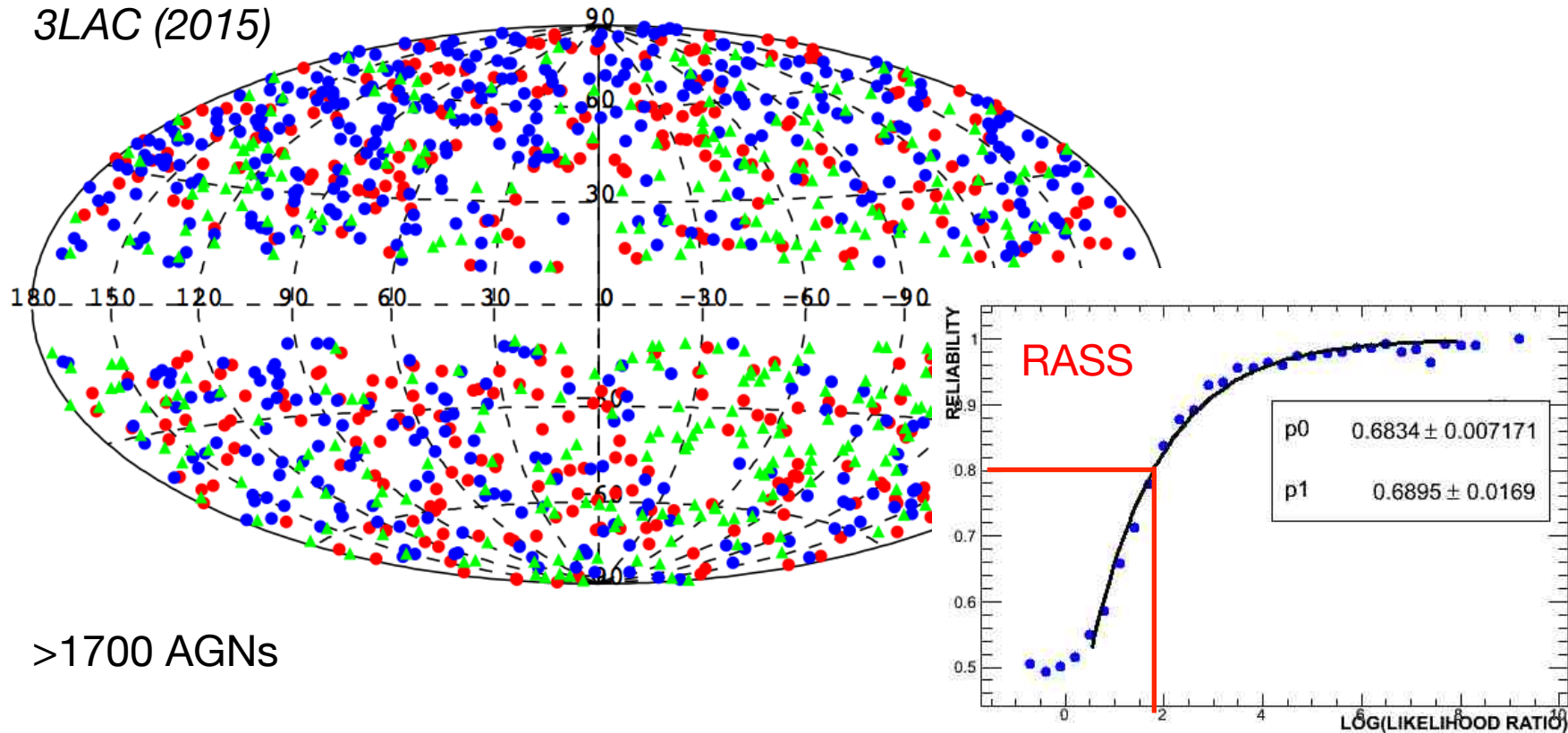
BACKUP SLIDES



FERMI-LAT AGN (LAC) CATALOGS @ SSDC



3LAC (2015)



Likelihood Ratio (LR) association method for Fermi LAC catalogs developed @ SSDC. Use uniform radio/X-rays surveys (NVSS, SUMSS, RASS, ...) for gamma-ray counterpart search. Use of source flux ($\log N - \log S$).



LAC CLASSIFICATION



Identification of the associated sources:

→ checking source by source the association list created with sources with association probability greater than 80% in at least in one method.

Collecting Multi-wavelength information:

→ Search for the “blazarness” of a source

◆ Building Spectral energy distribution (SED)

→ individuating if the source has a flat radio spectrum

→ Broad band emission, double humps SED, lie on WISE blazars strip

◆ Searching for optical spectrum

→ Checking redshift (SDSS, NED, ...)



ASSOCIATION WITH FERMI-FHL

