

This table describes the columns in the main table of the 2FGL catalog fits format file, gll\_psc\_v04.fit. In addition to the main catalog table, the extensions Hist\_Start, containing the starting values (MET sec) of the time intervals used for evaluating variability, the Good Time Intervals (GTI), and the ExtendedSources used in the catalog analysis are included in the fits format file.

| Column Name        | Format | Unit                          | UCD                          | Comment   |
|--------------------|--------|-------------------------------|------------------------------|---|
| Source_Name        | 18A    |                               | meta.id;meta.main            | 2FGL JHHMM.m+DDMM; constructed according to IAU Specifications for Nomenclature; m is decimal minutes of R.A.; in the name R.A. and decl. are truncated at 0.1 decimal minutes and 1, respectively; “c” indicates that the source is considered to be potentially confused with Galactic diffuse emission; “e” indicates the source was included as an extended source in the analysis. |
| RAJ2000            | E      | deg                           | pos.eq.ra;meta.main          | Right Ascension (J2000).  |
| DEJ2000            | E      | deg                           | pos.eq.ra;meta.main          | Declination (J2000).  |
| GLON               | E      | deg                           | pos.galactic.lon             | Galactic Longitude.   |
| GLAT               | E      | deg                           | pos.galactic.lat             | Galactic Latitude.  |
| Conf_68_SemiMajor  | E      | deg                           | pos;stat.error               | Semimajor axis of error ellipse at 68% confidence.  |
| Conf_68_SemiMinor  | E      | deg                           | pos;stat.error               | Semiminor axis of error ellipse at 68% confidence.  |
| Conf_68_PosAng     | E      | deg                           |                              | Position angle of the 68% semimajor axis from celestial North, positive toward increasing RA (eastward).  |
| Conf_95_SemiMajor  | E      | deg                           | pos;stat.error               | Semimajor axis of error ellipse at 95% confidence.  |
| Conf_95_SemiMinor  | E      | deg                           | pos;stat.error               | Semiminor axis of error ellipse at 95% confidence.  |
| Conf_95_PosAng     | E      | deg                           |                              | Position angle of the 95% semimajor axis from celestial North, positive toward increasing RA (eastward).  |
| Signif_Avg         | E      |                               |                              | Source detection significance in Gaussian $\sigma$ units. Derived from the likelihood Test Statistic for 100 MeV-100 GeV analysis.  |
| Pivot_Energy       | E      | MeV                           |                              | Energy at which the error on differential photon flux is minimal (decorrelation energy for the power-law fit). Derived from the likelihood analysis for 100 MeV-100 GeV.  |
| Flux_Density       | E      | photon/cm <sup>2</sup> /MeV/s | phot.flux.density            | Differential photon flux at the Pivot_Energy. Derived from the likelihood analysis for 100 MeV-100 GeV.   |
| Unc_Flux_Density   | E      | photon/cm <sup>2</sup> /MeV/s | phot.flux.density;stat.error | 1- $\sigma$ error on differential photon flux at the Pivot_Energy.  |
| Spectral_Index     | E      |                               | spect.index                  | Best fit for the photon number power-law index. For LogParabola spectra, index at Pivot_Energy; for PLEXPcutoff spectra, low energy index. Derived from the likelihood analysis for 100 MeV-100 GeV.  |
| Unc_Spectral_Index | E      |                               | spect.index;stat.error       | 1- $\sigma$ error on Spectral_Index.  |
| Flux1000           | E      | photon/cm <sup>2</sup> /s     | phot.count;em.gamma          | Photon flux for 1 GeV-100 GeV obtained by summing the photon flux values from likelihood analysis in the three  |

|                    |     |                           |                                |  |
|--------------------|-----|---------------------------|--------------------------------|--|
| Unc_Flux1000       | E   | photon/cm <sup>2</sup> /s | phot.count;em.gamma;stat.error | bands from 1 GeV to 100 GeV. If $\Delta\text{flux}/\text{flux}$ exceeds 0.5, then $\text{flux} + 2*\Delta\text{flux}$ is given instead as an approximate 2- $\sigma$ upper limit.  |
| Energy_Flux100     | E   | erg/cm <sup>2</sup> /s    | phot.flux;em.gamma             | 1- $\sigma$ error on integral flux from 1 to 100 GeV obtained from summing in quadrature the errors from the three energy bands from 1 GeV to 100 GeV. If $\Delta\text{flux}/\text{flux}$ exceeds 0.5, then this is set to 0.                  |
| Unc_Energy_Flux100 | E   | erg/cm <sup>2</sup> /s    | phot.flux;em.gamma;stat.error  | Energy flux from 100 MeV to 100 GeV obtained by spectral fitting from 100 MeV to 100 GeV. If $\Delta\text{flux}/\text{flux}$ exceeds 0.5, then $\text{flux} + 2*\Delta\text{flux}$ is given instead as an approximate 2- $\sigma$ upper limit. |
| Signif_Curve       | E   |                           |                                | 1- $\sigma$ error on energy flux from 100 MeV to 100 GeV. If $\Delta\text{flux}/\text{flux}$ exceeds 0.5, then this is set to 0.   |
| SpectrumType       | 18A |                           |                                | Significance (in $\sigma$ units) of the fit improvement between power-law and either LogParabola (for ordinary sources) or PLEXPcutoff (for pulsars). A value greater than 16 triggers switching to the curved spectrum.                       |
| beta               | E   |                           |                                | Name of the spectral type used (PowerLaw, LogParabola, PLEXPcutoff). Note that there is no model called PLEXPcutoff for gtlike; instead we use PLSuperExpCutoff with the Index2 parameter set to 1.  |
| Unc_beta           | E   |                           |                                | Curvature parameter (beta) for LogParabola. NaN for other spectral types.  |
| Cutoff             | E   | MeV                       |                                | 1- $\sigma$ error on beta for LogParabola. NaN for other spectral types.   |
| Unc_Cutoff         | E   | MeV                       |                                | Cutoff energy as $\exp(-E/ECutoff)$ for PLEXPcutoff. NaN for other spectral types.   |
| PowerLaw_Index     | E   |                           |                                | 1- $\sigma$ error on cutoff energy for PLSuperExpCutoff. NaN for other spectral types.   |
| Flux30_100         | E   | photon/cm <sup>2</sup> /s |                                | Best fit for the photon number power-law index assuming PowerLaw form. Derived from the likelihood analysis for 100 MeV to 100 GeV. Identical to Spectral_Index if SpectrumType is PowerLaw.   |
| Unc_Flux30_100     | E   | photon/cm <sup>2</sup> /s |                                | Integral photon flux from 30 to 100 MeV<br>- column intentionally set to NULL  |
| Sqrt_TS30_100      | E   |                           |                                | 1- $\sigma$ error on integral flux from 30 to 100 MeV<br>- column intentionally set to NULL  |
| Flux100_300        | E   | photon/cm <sup>2</sup> /s |                                | Square root of the Test Statistic between 30 and 100 MeV<br>- column intentionally set to NULL   |
|                    |     |                           |                                | Integral photon flux from 100 to 300 MeV from the likelihood   |

|                      |   |                           |   |
|----------------------|---|---------------------------|---|
| Unc_Flux100_300      | E | photon/cm <sup>2</sup> /s | analysis in that band with fixed photon power-law index.<br>2- $\sigma$ upper limit if the source is not significant in this band.<br>1- $\sigma$ error on integral flux from 100 to 300 MeV. Set to 0 if the source is not significant in this band.           |
| Sqrt_TS100_300       | E |                           | Square root of the Test Statistic between 100 and 300 MeV   |
| Flux300_1000         | E | photon/cm <sup>2</sup> /s | Integral photon flux from 300 MeV to 1 GeV from the likelihood analysis in that band with fixed photon power-law index.<br>2- $\sigma$ upper limit if the source is not significant in this band.   |
| Unc_Flux300_1000     | E | photon/cm <sup>2</sup> /s | 1- $\sigma$ error on integral flux from 300 MeV to 1 GeV. Set to 0 if the source is not significant in this band.   |
| Sqrt_TS300_1000      | E |                           | Square root of the Test Statistic between 300 MeV and 1 GeV.  |
| Flux1000_3000        | E | photon/cm <sup>2</sup> /s | Integral photon flux from 1 to 3 GeV from the likelihood analysis in that band with fixed photon power-law index.<br>2- $\sigma$ upper limit if the source is not significant in this band.   |
| Unc_Flux1000_3000    | E | photon/cm <sup>2</sup> /s | 1- $\sigma$ error on integral flux from 1 to 3 GeV. Set to 0 if the source is not significant in this band.   |
| Sqrt_TS1000_3000     | E |                           | Square root of the Test Statistic between 1 and 3 GeV.  |
| Flux3000_10000       | E | photon/cm <sup>2</sup> /s | Integral photon flux from 3 to 10 GeV from the likelihood analysis in that band with fixed photon power-law index.<br>2- $\sigma$ upper limit if the source is not significant in this band.  |
| Unc_Flux3000_10000   | E | photon/cm <sup>2</sup> /s | 1- $\sigma$ error on integral flux from 3 to 10 GeV. Set to 0 if the source is not significant in this band.  |
| Sqrt_TS3000_10000    | E |                           | Square root of the Test Statistic between 3 and 10 GeV.   |
| Flux10000_100000     | E | photon/cm <sup>2</sup> /s | Integral photon flux from 10 to 100 GeV from the likelihood analysis in that band with fixed photon power-law index.<br>2- $\sigma$ upper limit if the source is not significant in this band.  |
| Unc_Flux10000_100000 | E | photon/cm <sup>2</sup> /s | 1- $\sigma$ error on integral flux from 10 to 100 GeV. Set to 0 if the source is not significant in this band.  |
| Sqrt_TS10000_100000  | E |                           | Square root of the Test Statistic between 10 and 100 GeV.   |
| Variability_Index    | E |                           | Sum of 2*Log(Likelihood) comparison between the flux fitted in 24 time segments and a flat lightcurve over the full 2-year catalog interval. A value greater than 41.64 indicates < 1% chance of being a steady source. See the accompanying paper for details. |
| Signif_Peak          | E |                           | Source significance in the time interval giving the maximum monthly value of the photon flux as derived from the likelihood analysis for 100 MeV-100 GeV. If the probability of steady emission is >1%, this is NULL.   |
| Flux_Peak            | E | photon/cm <sup>2</sup> /s | Maximum monthly value of the integral photon flux derived from the likelihood analysis for 100 MeV- 100 GeV. If the   |

|                      |     |                           |   |
|----------------------|-----|---------------------------|---|
| Unc_Flux_Peak        | E   | photon/cm <sup>2</sup> /s | probability of steady emission is >1% this is NULL.   |
| Time_Peak            | D   | s                         | 1- $\sigma$ error on Flux_Peak.   |
| Peak_Interval        | E   | s                         | Mission Elapsed Time (seconds since 2001 January 1 0 UT)<br>at the center of the interval with the maximum photon flux.<br>If the probability of steady emission is >1%, this is NULL.  |
| Flux_History         | nE  | photon/cm <sup>2</sup> /s | Length of interval in which peak integral photon flux was measured.   |
| Flux_History         | nE  | photon/cm <sup>2</sup> /s | Vector of the integral fluxes from 100 MeV to 100 GeV<br>in each interval (best fit from likelihood analysis with spectral shape fixed to that obtained over 2 years).  |
| Unc_Flag_History     | nB  |                           | Vector of the integral fluxes from 100 MeV to 100 GeV<br>in each interval (best fit from likelihood analysis with spectral shape fixed to that obtained over 2 years for SpectrumType).   |
| Extended_Source_Name | 18A |                           | Vector to flag error calculation used for Unc_Flux_History values.<br>0 if uncertainty is obtained from the covariance matrix;<br>1 if from (2- $\sigma$ upper limit - best fit)/2.   |
| 0FGL_Name            | 18A |                           | Cross-reference to the ExtendedSources extension, if applicable.<br>NULL for sources treated as points in the catalog analysis.   |
| 1FGL_Name            | 18A |                           | Name of a corresponding 0FGL source, if any.  |
| ASSOC_GAM1           | 18A |                           | Name of a corresponding 1FGL source, if any.  |
| ASSOC_GAM2           | 18A |                           | Name of likely corresponding source from the 1AGL catalog,<br>if any.   |
| ASSOC_GAM3           | 18A |                           | Name of likely corresponding source from the 3EG catalog,<br>if any.  |
| TEVCAT_FLAG          | A   |                           | Name of likely corresponding source from the EGR catalog,<br>if any.  |
| ASSOC_TEV            | 24A |                           | TeV Association flag: 'N' for no TeV association, 'P' for small<br>TeV source, 'E' for extended TeV source (diameter>40').  |
| CLASS1               | 3A  |                           | Name of likely corresponding source from the TeVcat catalog,<br>if any.   |
| CLASS2               | 3A  |                           | Primary class designation of the identification or likely<br>associated source. See accompanying paper for details of<br>class designations and the association method.   |
| ASSOC1               | 24A |                           | Secondary class designation of the identification or likely<br>associated source.   |
| ASSOC2               | 24A |                           | Name of identified or likely associated source.   |
| Flags                | I   |                           | Alternate name of identified or likely associated source.<br>Analysis flags to indicate possible issues noted in detection or<br>characterization of the source. The flag values are encoded<br>in a single column with Flag $n$ having value $2^{n-1}$ . Sources |

having no flags raised,  $\text{Flags}=0$ , are those without potential problems. Each condition present raises a unique bit. See the accompanying paper for details.

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