Gamma-ray PSR Jxxxxpyyyy

User manual for this template page (delete it when you create your new page)

3PC was submitted (5 April 2023) to ApJ Suppl with 294 confirmed gamma-ray pulsars. Another >40 4FGL sources are tabulated in 3PC as highly promising candidates. These include: PSC MSP discoveries at the positions of non-variable LAT sources with pulsar-like spectra (Table 6) ; other Galactic pulsars co-located with LAT sources (Table 5) ; optical and/or X-ray spider candidates co-located with LAT sources (Table 15). Furthermore, radio pulsars continue to be found in surveys, independently of the PSC and/or the LAT catalogs, some of which lead directly to gamma-ray pulsations.

As phase-connected rotation ephemerides are obtained, gamma-ray pulsations are seen, confirming the candidates. In the month following submission, 3 were found.

This page is part of the process to make them public. If the discoverers agree, and new gamma-ray pulsar is accepted by LAT Gatekeepers (i.e. is already posted at Detected Gamma-Ray Pulsars) then:

1. Copy this page to create a new one, with the pulsar name in the title. Replace this blurb on your new page with one summarizing the gamma-ray discovery path: who did what and how. Below is sample information you may want to provide. Edit this template page to add suggestions you may have.
2. Link your new page to the Public List of LAT-Detected Gamma-Ray Pulsars. Invite Nestor Mirabal <nestorm@umbc.edu> to link it to https://fermi.gsfc.nasa.gov/ssc/data/access/lat/3rd_PSR_catalog/ . (...) Ah, except that NASA may not want links to pages that can be modified by outsiders... In which case, Nestor may copy the contents and create a page in conformity with FSSC rules. Inform your LAT pulsar colleagues when you're making things public.
3. That's it!

General Information

```
    Name       RAJD         DECJD      P0        GLON   GLAT     EDOT       DM    Dist_ymw   Dist_NE2001  Codes
(see bottom of page)
J1921+1929   290.347295  19.489532  0.002646   53.6195  2.4529   8.04e34  64.73   2.43 kpc    3.24 kpc    'R'
'mbr'

       name        angSep   (maj,min95)  Sigma    nickname
4FGL J1921.1+1930  0.056   (0.08, 0.06)   5.7    504P-0570

S1400 and ref:  0.198 sbm+22  G100: 3.49e-12 +/- 8.46e-13
 LUMG: 2.48e+33   +/-  (6.00e+32, 6.00e+32)  +/-   (1.58e+33, 2.38e+33)
 EFFG:  0.030 +/- 0.0074 +/- (0.02, 0.03)  (first uncertainty is statistical, second includes the distance
uncertainty)
 PLEC4 Epeak:  2550 +/- 677 MeV
```

This pulsar was discovered by AAA et al, using instrument BBB, subsequent to ideas/observations advanced by CCC et al at such and such wavelengths using instrument DDD. Key dates, if you have them.

If the "who" includes MeerKAT TRAPUM, use the link http://www.trapum.org/discoveries/ to point the public towards their discovery. Colin Clark recently (3 May 2023) added the gamma-ray profiles for PSRs J1356+0230 and J2333-5526.

If the discoverers are willing to share the .par file (rotation ephemeris), you could put it here. If they want to protect precise info until they've published, you can remove decimal places.

Show the gamma-ray phase histogram. If you have Htest vs MJD ; and/or MJD vs Phase ; and/or phase histograms in energy sub-bands ; then show them as well.

Show the LAT Spectral Energy Distribution if you have it.

Show the radio discovery plot if you have it. If you know how to overlay it, phase aligned, on the gamma-ray histogram, then do so.

Show the spatial map of the pulsar (where it is on the sky, what's nearby) if you think it's interesting.

If you refer to 4FGL you can say e.g. **Incremental Fermi Large Area Telescope Fourth Source Catalog** Abdollahi, S. et al. 2022, ApJS, 260, 53 doi: 10.3847/1538-4365/ac6751 arXiv: 2201.11184 ADS: 2022ApJS..260...53A

If you refer to ATNF psrcat you can use this link.

Other links you may want to use: **Precise -Ray Timing and Radio Observations of 17 Fermi -Ray Pulsars** Ray, P. S., Kerr, M., Parent, D. et al. 2011ApJS..194...17R

Timing gamma-ray pulsars with the Fermi Large Area Telescope: Timing Noise and Astrometry Kerr, M., Ray, P.S., Johnston, S. et al. 2015ApJ...814..128K

Extending the event-weighted pulsation search to very faint gamma-ray sources Bruel, P. 2019A&A...622A.108B

Searching a Thousand Radio Pulsars for Gamma-ray Emission Smith, D. A., Bruel, P., Cognard, I. et al. 2019ApJ...871...78S

Et cetera.

Pulsar History and Characteristics codes:

'G' 'Discovered in Fermi-LAT gamma-ray data.'

'R' 'Discovered in the radio and/or gamma-ray pulsations detected using the radio ephemeris.'

'X' 'Discovered in the X-ray and/or gamma-ray pulsations detected using the X-ray ephemeris.'

'E' 'Pulsar was detected in gamma rays by EGRET/COMPTEL.'

'P' 'Pulsar was discovered by the Pulsar Search Consortium.'

'U' 'Discovered using a Fermi-LAT seed position.'

'r' 'Pulsations detected in the radio band.'

'x' 'Pulsations detected in the X-ray band.'

'm' 'Millisecond pulsar.'

'b' 'Pulsar is in a binary system.'

'w' 'Pulsar is in a black-widow system.'

'k' 'Pulsar is in a redback system.'

'q' 'Gamma pulsar with no radio detection'