PWNCAT2

Lots of people...

ABSTRACT

Abstract goes here

Subject headings: Catalogs; Fermi Gamma-ray Space Telescope; Gamma rays: observations; pulsar wind nebula

*Todo list

1. Introduction

The introduction goes here...

Primary motivations for improved analysis

- More data (3 years vs 18 months)

- Many new GeV pulsars
- Hope to find new PWN in the off-peak emission of LAT-detected GeV Pulsars.
- Going to higher energies thanks to improved IRFs.
- Better spatial/morphological analysis due to new `pointlike` code.

2. LAT Description and Observations

Description goes here...

We used the same data set as that used in the second *Fermi*-LAT pulsar catalog. In particular, this data set spans 3 years from XXXXXXto XXXXXX.

Start Date

End Date

3. Timing Analysis

Timing analysis goes here...

4. Off-peak Phase Selection

To study the off-peak emission of LAT-detected pulsars, we first developed a new method for defining the off-peak emission. The primary constraint for this method was that it was systematic, computationally efficient and model independent, and that it correctly removed the pulsed emission for already studied pulsars.

The method we developed is

- First, deconstruct the pulsar phaseogram using a Bayseian blocks representation of the data.
  - Figure 1 shows the off peak selection for some pulsars...
  - Set the ncpPrior parameter to 5
- Before beinning the data, first rotate the maximum phase range to 0 so that the off-peak region will not overlap the phase edge.
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THe off peak phase range is defined in Table 1.

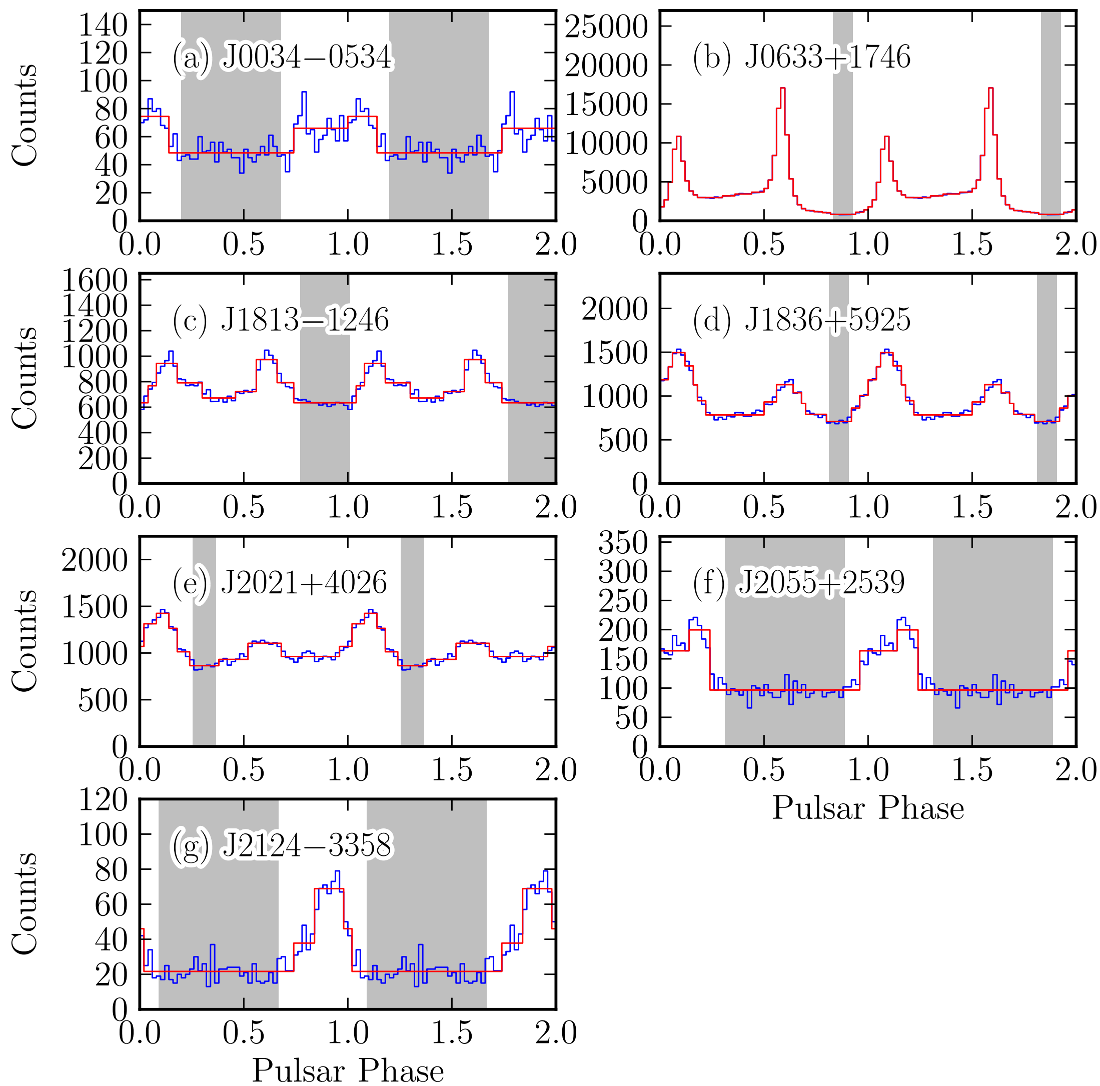

Fig. 1.— Off peak selection for some pulsars...

Table 1. Timing Observatories, definition of the off-peak region, and pulsar distances.

PSR	ObsID	Phase	Distance	Observation period rejected (MJD)
J0007+7303	···	0.53-0.91	···	···
J0030+0451	···	0.71-0.05	···	···
J0034−0534	···	0.21-0.68	···	···
J0106+4855	···	0.24-0.54	···	···
J0218+4232	···	0.83-0.17	···	···
J0248+6021	···	0.56-0.12	···	···
J0340+4130	···	0.17-0.64	···	···
J0357+3205	···	0.37-0.85	···	···
J0437−4715	···	0.60-0.16	···	···
J0534+2200	···	0.60-0.84	···	···
J0610−2100	···	0.29-0.51	···	···
J0613−0200	···	0.57-0.05	···	···
J0614−3329	···	0.36-0.50	···	···
J0622+3749	···	0.31-0.87	···	···
J0631+1036	···	0.64-0.19	···	···
J0633+0632	···	0.65-0.96	···	···
J0633+1746	···	0.84-0.92	···	···
J0659+1414	···	0.41-0.04	···	···
J0729−1448	···	0.70-0.42	···	···
J0734−1559	···	0.33-0.83	···	···
J0742−2822	···	0.73-0.37	···	···
J0751+1807	···	0.75-0.29	···	···
J0835−4510	···	0.85-0.03	···	···
J0908−4913	···	0.17-0.53	···	···
J0940−5428	···	0.56-0.14	···	···
J1016−5857	···	0.62-0.01	···	···
J1019−5749	···	0.66-0.37	···	···
J1023−5746	···	0.67-0.01	···	···
J1024−0719	···	0.88-0.34	···	···
J1028−5819	···	0.77-0.08	···	···
J1044−5737	···	0.56-0.96	···	···
J1048−5832	···	0.67-0.03	···	···
J1057−5226	···	0.16-0.56	···	···
J1105−6107	···	0.69-0.03	···	···
J1119−6127	···	0.60-0.18	···	···
J1135−6055	···	0.44-0.86	···	···
J1231−1411	···	0.86-0.10	···	···
J1357−6429	···	0.79-0.01	···	···
J1410−6132	···	0.51-0.89	···	···
J1413−6205	···	0.58-0.02	···	···
J1418−6058	···	0.66-0.92	···	···
J1420−6048	···	0.57-0.05	···	···
J1429−5911	···	0.32-0.42	···	···
J1459−6053	···	0.33-0.67	···	···
J1509−5850	···	0.65-0.13	···	···

Table 1—Continued

PSR	ObsID	Phase	Distance	Observation period rejected (MJD)
J1513−5908	···	0.52-0.12	···	···
J1531−5610	···	0.55-0.19	···	···
J1600−3053	···	0.53-0.09	···	···
J1614−2230	···	0.83-0.17	···	···
J1620−4927	···	0.54-0.98	···	···
J1702−4128	···	0.58-0.16	···	···
J1709−4429	···	0.75-0.07	···	···
J1713+0747	···	0.67-0.19	···	···
J1718−3825	···	0.01-0.19	···	···
J1732−3131	···	0.79-0.95	···	···
J1741−2054	···	0.47-0.97	···	···
J1744−1134	···	0.16-0.72	···	···
J1746−3239	···	0.42-0.98	···	···
J1747−2958	···	0.66-0.10	···	···
J1803−2149	···	0.58-0.02	···	···
J1809−2332	···	0.53-0.91	···	···
J1813−1246	···	0.78-0.01	···	···
J1823−3021A	···	0.09-0.56	···	···
J1826−1256	···	0.26-0.52	···	···
J1836+5925	···	0.82-0.90	···	···
J1846+0919	···	0.42-0.88	···	···
J1907+0602	···	0.69-0.05	···	···
J1939+2134	···	0.09-0.47	···	···
J1952+3252	···	0.73-0.05	···	···
J1954+2836	···	0.67-0.98	···	···
J1957+5033	···	0.44-0.90	···	···
J1958+2846	···	0.64-0.92	···	···
J1959+2048	···	0.79-0.97	···	···
J2017+0603	···	0.76-0.20	···	···
J2021+3651	···	0.74-0.98	···	···
J2021+4026	···	0.26-0.36	···	···
J2028+3332	···	0.58-0.97	···	···
J2030+3641	···	0.71-0.21	···	···
J2030+4415	···	0.94-0.02	···	···
J2032+4127	···	0.68-0.92	···	···
J2043+2740	···	0.64-0.04	···	···
J2051−0827	···	0.77-0.24	···	···
J2055+2539	···	0.39-0.86	···	···
J2124−3358	···	0.14-0.58	···	···
J2139+4716	···	0.27-0.90	···	···
J2214+3000	···	0.64-0.74	···	···
J2238+5903	···	0.65-0.99	···	···
J2240+5832	···	0.70-0.46	···	···
J2302+4442	···	0.75-0.23	···	···

Note. —

Put table comments

5. Analysis of the *Fermi*-LAT data

Methods for data analysis

- Cut on pulsar phase
- Perform localization or extension fitting using `gtlike` using energies from 1 GeV to 316 GeV.
- Perform spectral analysis using `gtlike` for energies above 100 MeV to 316 GeV.
- There is a detection if TS $>$ 25 in the point-like source hypothesis after fitting the position of the point-like source.
- Consider the source to be extended if $\mathrm{TS}_{\mathrm{ext}} > 16$. Similar to extended source search paper . cite extended source search paper
- Calculate $\mathrm{TS}_{\mathrm{cutoff}}$ for all energies.

When to consider the source a pulsar or PWN.

- If extended, then it is a PWN (cannot be a pulsar)
- If it is significiant for E¿10 GeV, it is a PWN (too hard to be a pulsar)
- Otherwise, if it has a cutoff, it is a Pulsar candidate
- For point-like emission that is not significantly cutoff, the emission mechanism is uncertain.

6. Results

Results goes here. . .

Table 2 shows the results of the all energy analysis of the off-peak emission for each pulsar.

Table 3 shows the results of the analysis in separate energy bins of each pulsar.

Table 4 shows the results of the cutoff test for pulsars with significant low-energy emission.

Table 2. All Energy spectral fit for the

How many pulsars?

LAT-detected Pulsars

PSR	TS	$F_{0.1-316}$ (10^{-9} ph cm^{-2} s^{-1})	$G_{0.1-316}$ (10^{-12} erg cm^{-2}s^{-1})	Γ	Luminosity (10^{33} erg s^{-1})
J0007+7303	1.6	< 18.76	< 24.22	···	None
J0030+0451	14.1	< 8.22	< 10.61	···	None
J0034−0534	41.9	15.88 ± 4.74	8.45 ± 1.65	2.41 ± 0.19	None
J0106+4855	0.0	< 6.80	< 8.78	···	None
J0218+4232	33.9	49.22 ± 20.43	17.87 ± 3.30	2.79 ± 0.49	None
J0248+6021	18.8	< 13.60	< 17.56	···	None
J0340+4130	25.6	10.50 ± 3.68	9.40 ± 2.46	2.13 ± 0.15	None
J0357+3205	0.0	< 2.97	< 3.83	···	None
J0437−4715	0.0	None	None	···	None
J0534+2200	4957.5	559.70 ± 19.47	397.10 ± 12.22	2.24 ± 0.02	None
J0610−2100	0.0	< 3.23	< 4.17	···	None
J0613−0200	0.0	< 3.37	< 4.35	···	None
J0614−3329	15.6	< 15.81	< 20.41	···	None
J0622+3749	1.0	< 7.81	< 10.08	···	None
J0631+1036	14.5	< 13.79	< 17.80	···	None
J0633+0632	4.1	< 10.19	< 13.16	···	None
J0633+1746	2851.0	882.36 ± 30.61	578.56 ± 23.60	2.28 ± 0.03	None
J0659+1414	0.0	< 1.77	< 2.29	···	None
J0729−1448	0.0	< 4.85	< 6.26	···	None
J0734−1559	24.5	< 12.39	< 16.00	···	None
J0742−2822	4.3	< 6.84	< 8.83	···	None
J0751+1807	8.1	< 5.70	< 7.36	···	None
J0835−4510	304.7	296.53 ± 22.67	132.40 ± 8.94	2.55 ± 0.06	None
J0908−4913	15.1	< 24.71	< 31.89	···	None
J0940−5428	0.0	< 1.73	< 2.24	···	None
J1016−5857	0.0	< 12.09	< 15.61	···	None
J1019−5749	2.4	< 12.59	< 16.25	···	None
J1023−5746	62.8	80.23 ± 25.58	62.22 ± 9.56	2.20 ± 0.12	None
J1024−0719	0.0	< 2.30	< 2.97	···	None
J1028−5819	8.0	< 26.93	< 34.77	···	None
J1044−5737	0.0	< 17.76	< 22.92	···	None
J1048−5832	0.0	< 16.77	< 21.65	···	None
J1057−5226	0.8	< 5.03	< 6.49	···	None
J1105−6107	11.0	< 31.71	< 40.94	···	None
J1119−6127	109.9	76.20 ± 15.63	50.77 ± 5.77	2.27 ± 0.09	None
J1135−6055	4.2	< 6.89	< 8.89	···	None
J1231−1411	0.0	< 3.21	< 4.14	···	None
J1357−6429	0.0	< 5.72	< 7.38	···	None
J1410−6132	18.4	< 42.29	< 54.60	···	None
J1413−6205	0.0	< 11.47	< 14.80	···	None
J1418−6058	0.0	< 34.10	< 44.02	···	None
J1420−6048	12.1	< 31.85	< 41.12	···	None
J1429−5911	0.0	< 12.65	< 16.33	···	None
J1459−6053	0.0	< 9.08	< 11.72	···	None
J1509−5850	0.0	< 9.66	< 12.47	···	None

Table 2—Continued

PSR	TS	$F_{0.1-316}$ (10^{-9} ph cm^{-2} s^{-1})	$G_{0.1-316}$ (10^{-12} erg cm^{-2}s^{-1})	Γ	Luminosity (10^{33} erg s^{-1})
J1513−5908	119.8	18.48 ± 7.36	51.16 ± 8.54	1.78 ± 0.12	None
J1531−5610	0.5	< 3.52	< 4.54	···	None
J1600−3053	0.0	< 1.85	< 2.39	···	None
J1614−2230	0.9	< 5.93	< 7.65	···	None
J1620−4927	26.9	46.06 ± 15.04	45.58 ± 9.97	2.09 ± 0.11	None
J1702−4128	0.0	< 5.75	< 7.42	···	None
J1709−4429	28.3	104.11 ± 22.96	34.68 ± 6.84	2.92 ± 0.15	None
J1713+0747	0.0	< 4.79	< 6.18	···	None
J1718−3825	0.0	< 14.54	< 18.77	···	None
J1732−3131	0.0	< 8.64	< 11.15	···	None
J1741−2054	0.0	< 13.38	< 17.28	···	None
J1744−1134	74.4	47.11 ± 8.73	27.61 ± 3.67	2.34 ± 0.08	None
J1746−3239	47.6	93.11 ± 16.62	44.46 ± 6.07	2.49 ± 0.09	None
J1747−2958	30.3	109.66 ± 55.08	65.74 ± 41.25	2.33 ± 0.07	None
J1803−2149	6.1	< 27.06	< 34.93	···	None
J1809−2332	23.1	< 37.15	< 47.95	···	None
J1813−1246	51.4	183.13 ± 41.35	80.03 ± 11.58	2.57 ± 0.15	None
J1823−3021A	2.7	< 5.16	< 6.66	···	None
J1826−1256	18.4	< 66.22	< 85.48	···	None
J1836+5925	5020.0	561.42 ± 17.71	538.65 ± 25.37	2.11 ± 0.02	None
J1846+0919	0.0	< 3.35	< 4.32	···	None
J1907+0602	0.0	< 7.26	< 9.38	···	None
J1939+2134	0.0	< 4.40	< 5.68	···	None
J1952+3252	0.4	< 7.78	< 10.05	···	None
J1954+2836	6.1	< 18.52	< 23.91	···	None
J1957+5033	0.0	< 2.52	< 3.26	···	None
J1958+2846	0.0	< 7.72	< 9.97	···	None
J1959+2048	0.0	< 4.89	< 6.32	···	None
J2017+0603	0.0	< 2.96	< 3.83	···	None
J2021+3651	0.1	< 7.88	< 10.18	···	None
J2021+4026	919.3	1158.92 ± 54.80	773.12 ± 32.47	2.27 ± 0.02	None
J2028+3332	0.0	< 4.57	< 5.90	···	None
J2030+3641	0.0	< 2.89	< 3.73	···	None
J2030+4415	3.5	< 28.40	< 36.66	···	None
J2032+4127	11.5	< 30.38	< 39.21	···	None
J2043+2740	0.0	< 2.58	< 3.33	···	None
J2051−0827	0.0	< 1.89	< 2.44	···	None
J2055+2539	108.4	47.02 ± 6.41	21.43 ± 2.28	2.53 ± 0.08	None
J2124−3358	103.4	19.86 ± 3.88	18.02 ± 3.05	2.13 ± 0.10	None
J2139+4716	16.8	< 9.29	< 11.99	···	None
J2214+3000	0.0	< 5.02	< 6.48	···	None
J2238+5903	0.0	< 6.19	< 7.99	···	None
J2240+5832	0.0	< 6.37	< 8.22	···	None
J2302+4442	114.7	33.50 ± 5.34	18.64 ± 2.23	2.38 ± 0.10	None

Note. —

Put table comments

Table 3. Energy bin spectral fit for the

How many pulsars?

LAT-detected Pulsars

PSR	$TS_{0.1-1}$	$F_{0.1-1}$ (10^{-9} ph cm^{-2} s^{-1})	$\Gamma_{0.1-1}$	TS_{1-10}	F_{1-10} (10^{-9} ph cm^{-2} s^{-1})	Γ_{1-10}	TS_{10-316}	F_{10-316} (10^{-9} ph cm^{-2} s^{-1})	Γ_{10-316}
J0007+7303	41.5	24.69 ± 4.11	None	23.4	< 1.41	None	1.2	< 0.15	None
J0030+0451	14.5	< 16.93	None	4.2	< 0.60	None	0.0	< 0.12	None
J0034−0534	20.1	< 15.78	None	25.5	0.64 ± 0.19	None	0.0	< 0.07	None
J0106+4855	1.5	< 11.34	None	2.8	< 0.80	None	0.0	< 0.11	None
J0218+4232	54.3	30.70 ± 4.56	None	7.6	< 1.13	None	0.0	< 0.10	None
J0248+6021	27.1	32.35 ± 6.38	None	4.3	< 0.96	None	2.5	< 0.13	None
J0340+4130	0.6	< 9.05	None	36.3	1.16 ± 0.26	None	0.0	< 0.07	None
J0357+3205	0.0	< 6.04	None	0.0	< 0.40	None	0.0	< 0.09	None
J0437−4715	0.7	< 5.11	None	0.0	< 0.21	None	0.0	< 0.05	None
J0534+2200	2065.0	432.14 ± 12.30	None	2101.7	28.41 ± 1.28	None	1227.0	5.35 ± 0.47	None
J0610−2100	0.0	< 6.16	None	0.0	< 0.52	None	0.0	< 0.15	None
J0613−0200	0.4	< 10.87	None	0.0	< 0.38	None	0.0	< 0.10	None
J0614−3329	16.8	< 28.41	None	1.8	< 1.09	None	0.0	< 0.22	None
J0622+3749	3.2	< 10.50	None	10.1	< 0.92	None	0.0	< 0.07	None
J0631+1036	13.5	< 30.33	None	3.9	< 1.11	None	2.3	< 0.15	None
J0633+0632	0.0	< 16.00	None	2.2	< 1.44	None	0.0	< 0.17	None
J0633+1746	2432.9	770.12 ± 23.09	None	865.5	40.45 ± 2.66	None	0.0	< 0.53	None
J0659+1414	0.0	< 4.00	None	0.0	< 0.27	None	0.0	< 0.06	None
J0729−1448	5.7	< 18.70	None	0.1	< 0.48	None	0.0	< 0.06	None
J0734−1559	36.7	33.00 ± 5.75	None	0.0	< 0.65	None	0.0	< 0.08	None
J0742−2822	7.3	< 20.56	None	0.0	< 0.49	None	2.4	< 0.12	None
J0751+1807	1.8	< 7.59	None	9.6	< 0.71	None	0.0	< 0.06	None
J0835−4510	341.2	233.53 ± 14.30	None	42.5	5.63 ± 1.10	None	0.0	< 0.39	None
J0908−4913	17.9	< 55.19	None	2.0	< 1.79	None	3.4	< 0.26	None
J0940−5428	0.0	< 2.40	None	0.0	< 0.32	None	0.8	< 0.12	None
J1016−5857	0.0	< 18.70	None	0.6	< 1.53	None	1.2	< 0.23	None
J1019−5749	6.9	< 38.33	None	3.0	< 1.44	None	0.0	< 0.10	None
J1023−5746	33.6	69.82 ± 12.30	None	31.0	3.91 ± 0.82	None	23.1	< 0.73	None
J1024−0719	0.0	< 5.49	None	0.0	< 0.30	None	0.0	< 0.08	None
J1028−5819	4.5	< 46.61	None	8.1	< 2.84	None	0.0	< 0.26	None
J1044−5737	13.3	< 45.47	None	3.6	< 1.65	None	0.0	< 0.13	None
J1048−5832	1.6	< 28.62	None	8.5	< 2.11	None	0.0	< 0.14	None
J1057−5226	0.1	< 10.22	None	0.9	< 0.58	None	0.0	< 0.12	None
J1105−6107	15.5	< 60.17	None	10.6	< 3.20	None	0.1	< 0.19	None
J1119−6127	78.5	67.54 ± 7.91	None	63.2	3.39 ± 0.52	None	15.2	< 0.29	None
J1135−6055	2.4	< 24.56	None	0.0	< 0.67	None	1.5	< 0.12	None
J1231−1411	0.3	< 10.39	None	0.0	< 0.36	None	0.0	< 0.14	None
J1357−6429	0.0	< 12.05	None	0.0	< 0.64	None	1.2	< 0.27	None
J1410−6132	0.2	< 33.67	None	16.9	< 5.27	None	5.5	< 0.54	None
J1413−6205	0.0	< 12.32	None	1.6	< 1.83	None	1.4	< 0.22	None
J1418−6058	0.0	< 30.95	None	4.4	< 4.23	None	4.5	< 0.60	None
J1420−6048	2.2	< 41.83	None	2.0	< 2.88	None	11.1	< 0.47	None
J1429−5911	0.0	< 21.81	None	0.0	< 1.93	None	0.4	< 0.42	None
J1459−6053	1.9	< 30.07	None	0.0	< 0.82	None	0.0	< 0.22	None
J1509−5850	0.2	< 24.81	None	0.0	< 1.13	None	0.0	< 0.18	None
J1513−5908	7.4	< 39.24	None	34.0	2.48 ± 0.51	None	83.8	0.54 ± 0.11	None
J1531−5610	0.0	< 5.32	None	0.0	< 0.64	None	0.3	< 0.15	None
J1600−3053	0.0	< 3.47	None	0.0	< 0.35	None	0.0	< 0.06	None
J1614−2230	0.0	< 10.16	None	2.0	< 0.84	None	0.0	< 0.11	None
J1620−4927	8.8	< 67.59	None	19.1	< 5.47	None	6.1	< 0.41	None
J1702−4128	0.0	< 10.01	None	0.0	< 0.93	None	0.1	< 0.21	None
J1709−4429	30.7	63.29 ± 11.82	None	0.1	< 1.15	None	0.0	< 0.16	None
J1713+0747	3.9	< 12.83	None	0.6	< 0.50	None	0.0	< 0.07	None
J1718−3825	0.3	< 51.37	None	0.0	< 1.61	None	0.1	< 0.33	None
J1732−3131	0.0	< 23.46	None	0.0	< 1.20	None	0.0	< 0.39	None
J1741−2054	5.0	< 28.78	None	2.3	< 1.15	None	3.3	< 0.20	None
J1744−1134	32.2	33.65 ± 6.21	None	48.9	2.25 ± 0.41	None	0.4	< 0.10	None
J1746−3239	60.7	76.79 ± 10.21	None	22.1	< 3.44	None	0.0	< 0.08	None
J1747−2958	45.5	112.35 ± 16.93	None	28.0	4.80 ± 1.03	None	0.0	< 0.15	None
J1803−2149	1.0	< 44.97	None	2.2	< 2.71	None	2.6	< 0.41	None
J1809−2332	42.3	82.32 ± 13.11	None	7.0	< 2.79	None	0.0	< 0.16	None
J1813−1246	61.2	129.65 ± 17.44	None	20.7	< 5.41	None	0.8	< 0.33	None
J1823−3021A	0.4	< 12.31	None	0.0	< 0.40	None	3.3	< 0.18	None
J1826−1256	29.3	118.08 ± 22.24	None	4.5	< 4.93	None	0.3	< 0.47	None
J1836+5925	3491.7	497.90 ± 14.02	None	2421.1	44.07 ± 2.19	None	0.0	< 0.28	None
J1846+0919	0.0	< 8.71	None	0.0	< 0.46	None	0.0	< 0.11	None

The localization results are in Table 5

Add table on PWN Variability

Figure 2 shows the cutoff test…

7. Discussion

The discussion goes here...

The *Fermi* LAT Collaboration acknowledges generous ongoing support from a number of agencies and institutes that have supported both the development and the operation of the LAT as well as scientific data analysis. These include the National Aeronautics and Space Administration and the Department of Energy in the United States, the Commissariat à l'Energie Atomique and the Centre National de la Recherche Scientifique / Institut National de Physique Nucléaire et de Physique des Particules in France, the Agenzia Spaziale Italiana and the Istituto Nazionale di Fisica Nucleare in Italy, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), High Energy Accelerator Research Organization (KEK) and Japan Aerospace Exploration Agency (JAXA) in Japan, and the K. A. Wallenberg Foundation, the Swedish Research Council and the Swedish National Space Board in Sweden.

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[1]http://healpix.jpl.nasa.gov/

This preprint was prepared with the AAS LaTeX macros v5.2.

Table 3—Continued

PSR	$TS_{0.1-1}$	$F_{0.1-1}$ (10^{-9} ph cm^{-2} s^{-1})	$\Gamma_{0.1-1}$	TS_{1-10}	F_{1-10} (10^{-9} ph cm^{-2} s^{-1})	Γ_{1-10}	TS_{10-316}	F_{10-316} (10^{-9} ph cm^{-2} s^{-1})	Γ_{10-316}
J1907+0602	0.3	< 36.68	None	0.0	< 1.05	None	0.0	< 0.14	None
J1939+2134	0.0	< 11.60	None	0.0	< 0.85	None	0.0	< 0.12	None
J1952+3252	2.3	< 24.92	None	0.0	< 0.88	None	0.0	< 0.13	None
J1954+2836	2.9	< 36.32	None	5.5	< 2.12	None	0.1	< 0.18	None
J1957+5033	0.0	< 5.54	None	0.0	< 0.29	None	0.1	< 0.09	None
J1958+2846	0.0	< 13.30	None	0.4	< 1.30	None	0.0	< 0.16	None
J1959+2048	0.6	< 21.38	None	0.0	< 0.53	None	0.0	< 0.18	None
J2017+0603	0.8	< 10.00	None	0.0	< 0.31	None	0.0	< 0.10	None
J2021+3651	1.5	< 41.22	None	0.0	< 1.07	None	0.0	< 0.13	None
J2021+4026	1673.3	982.41 ± 29.24	None	914.2	59.76 ± 3.15	None	7.4	< 1.24	None
J2028+3332	0.0	< 13.05	None	0.0	< 0.75	None	0.0	< 0.09	None
J2030+3641	0.0	< 11.83	None	0.0	< 0.42	None	0.0	< 0.09	None
J2030+4415	0.5	< 52.40	None	1.1	< 2.94	None	2.0	< 0.62	None
J2032+4127	0.0	< 33.94	None	3.2	< 2.81	None	8.7	< 0.71	None
J2043+2740	0.0	< 5.44	None	0.3	< 0.34	None	0.0	< 0.10	None
J2051−0827	0.0	< 3.77	None	0.0	< 0.29	None	0.0	< 0.09	None
J2055+2539	106.3	36.24 ± 4.00	None	23.0	< 1.50	None	0.0	< 0.07	None
J2124−3358	16.6	< 16.97	None	107.2	2.01 ± 0.30	None	0.0	< 0.07	None
J2139+4716	10.0	< 18.78	None	8.0	< 1.02	None	0.0	< 0.05	None
J2214+3000	1.1	< 18.13	None	0.0	< 0.48	None	0.0	< 0.28	None
J2238+5903	0.2	< 16.55	None	0.2	< 0.87	None	0.0	< 0.10	None
J2240+5832	0.0	< 8.74	None	5.9	< 1.07	None	0.0	< 0.06	None
J2302+4442	61.9	24.28 ± 3.41	None	61.1	1.47 ± 0.26	None	0.0	< 0.08	None

Note. —

Put table comments

Table 4. Spectral fitting of pulsar wind nebula candidates with low energy component

PSR	$G_{0.1-316}$ (10^{-12} erg cm^{-2} s^{-1})	Γ	$E_{\rm cutoff}$ (GeV)	$TS_{\rm cutoff}$
J0034−0534	6.06 ± 1.59	1.49 ± 0.67	1.52 ± 1.17	5.3
J0633+1746	415.30 ± 12.92	1.41 ± 0.10	1.00 ± 0.13	177.0
J1813−1246	59.79 ± 4.84	1.61 ± 0.05	1.00 ± 0.07	2.5
J1836+5925	330.12 ± 8.76	1.40 ± 0.03	1.64 ± 0.07	203.4
J2021+4026	585.63 ± 22.09	1.65 ± 0.08	1.82 ± 0.26	136.7
J2055+2539	15.57 ± 2.25	0.67 ± 0.71	0.47 ± 0.20	29.1
J2124−3358	9.80 ± 1.57	0.15 ± 0.84	0.91 ± 0.42	27.6

Note. —

Put table comments

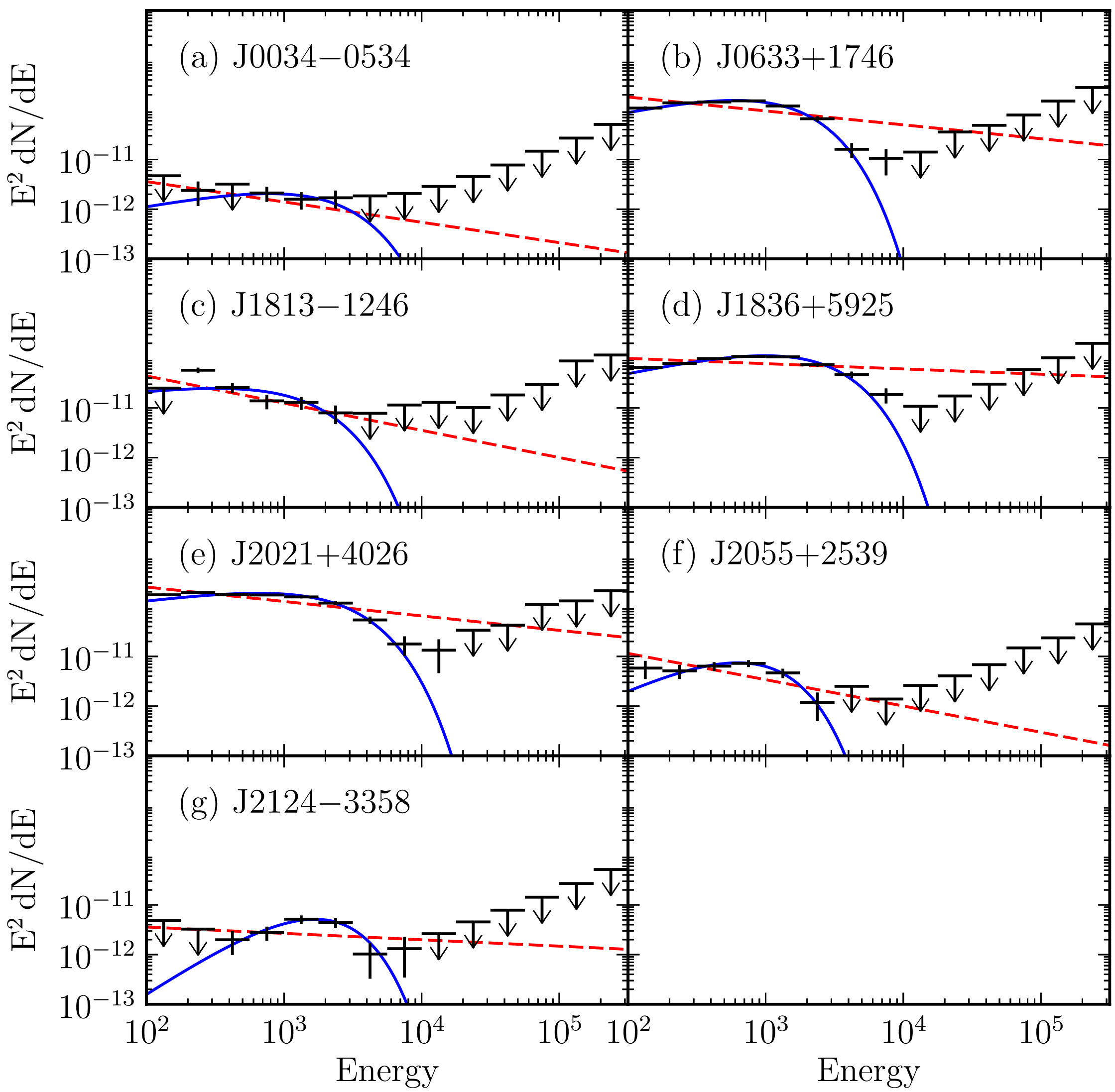

Fig. 2.— Cutoff test for some pulsars…

A. Validation of Extension Upper Limits

Table 5. Localization and extension fitting results

PSR	TS_{point}	GLON (deg)	GLAT (deg)	Pos Err	Offset (deg)	TS_{ext}	Extension (deg)
J0007+7303	82.8	119.66	10.46	None	0.00	10.6	< 2.62
J0034−0534	42.4	111.53	-68.03	0.06	0.04	0.0	< 0.12
J0218+4232	34.7	139.56	-17.53	0.08	0.05	0.0	< 0.15
J0340+4130	25.1	153.81	-11.00	0.06	0.04	0.0	< 0.13
J0534+2200	4959.1	184.55	-5.79	0.01	0.01	0.0	< 0.02
J0633+1746	2842.4	195.12	4.22	0.02	0.05	3.3	< 0.09
J0835−4510	304.7	263.46	-3.15	0.08	0.37	295.3	0.73 ± 0.06

Note. —

Put table comments