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The FAST Galactic Plane Pulsar Snapshot Survey. VI. The Discovery of 473 New Pulsars*

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Abstract

The Five-hundred-meter Aperture Spherical radio Telescope (FAST) is the most sensitive telescope at the *L*-band (1.0–1.5 GHz) and has been used to carry out the FAST Galactic Plane Pulsar Snapshot (GPPS) survey in the last 5 yr. Up to now, the survey has covered one-fourth of the planned areas within $\pm 10^\circ$ from the Galactic plane visible by FAST, and discovered 751 pulsars. After the first publication of the discovery of 201 pulsars and one rotating radio transient (RRAT) in 2021 and 76 RRATs in 2023, here we report the discovery of 473 new pulsars from the FAST GPPS survey, including 137 new millisecond pulsars and 30 new RRATs. We find 34 millisecond pulsars discovered by the GPPS survey which can be timed with a precision better than 3 μs by using FAST 15 minute observations and can be used for pulsar timing arrays. The GPPS survey has discovered eight pulsars with periods greater than 10 s including one with 29.77 s. The integrated profiles of pulsars and individual pulses of RRATs are presented. During the FAST GPPS survey, we also detected previously known pulsars and updated parameters for 52 pulsars. In addition, we discovered two fast radio bursts plus one probable case with high dispersion measures indicating their extragalactic origin.

Key words: (stars:) pulsars: general – surveys – polarization

1. Introduction

Pulsars are rotating neutron stars with radiation beams sweeping across the Earth. They are the condensed remnants of dead stars distributed widely in the Milky Way. There are two approaches for stars to evolve into neutron stars. The stars with intermediate masses can evolve into red giants, and finally, the neutron stars are born during the supernova so that some young pulsars have been detected within or beside supernova remnants (e.g., Kaspi et al. 1996; Liu et al. 2024). Stars with a mass of less than 8 $M_{\rm Sun}$ can evolve into white dwarfs, and then they can accrete materials from the companion if they are in a binary. When the total mass exceeds the Chandrasekhar limit, the white dwarf can collapse to form a neutron star (Alpar et al. 1982). Such formed neutron stars have been recycled to a short spin period. Though the distribution of pulsars in the Milky Way is unknown, one may expect their distribution similar to stars. The distribution is strongly dispersed due to the large kick velocities of neutron stars gained from the supernova explosion (e.g., Lyne & Lorimer 1994; Hobbs et al. 2005).

The rotation periods of currently detected pulsars are distributed in several groups from a millisecond to tens of seconds (Hessels et al. 2006; Caleb et al. 2022). Pulsars with a period less than 30 ms are millisecond pulsars (Backer et al. 1982), often in binary systems. Pulsars have periods ranging from 1.4 ms to 76 s. There have been 10 pulsars identified with periods greater than 10 s (e.g., Caleb et al. 2022), including two we found previously (Han et al. 2021). The larger pulse duty cycles of millisecond pulsars are generally thought (see, e.g., Kramer et al. 1999) to reflect their wide emission beams compared to those of normal pulsars (Lyne & Manchester 1988).

There have been many pulsar surveys, some done around the Galactic plane for pulsars in the Galactic disk (Clifton et al. 1992; Johnston et al. 1992; Manchester et al. 1996, 2001; Cordes et al. 2006; Parent et al. 2022; Padmanabh et al. 2023), some done over the whole visible sky (Keith et al. 2010; Barr et al. 2013; Boyles et al. 2013; Keane et al. 2018; Tyul'bashev et al. 2022, 2024), and some done in high or intermediate latitude regions for halo pulsars (Jacoby et al. 2009;

* See the essays in the News and Views by Dunc Lorimer (http://doi.org/10.1088/1674-4527/ada3b9) and also by David Smith (http://doi.org/10.1088/1674-4527/ada5cb).

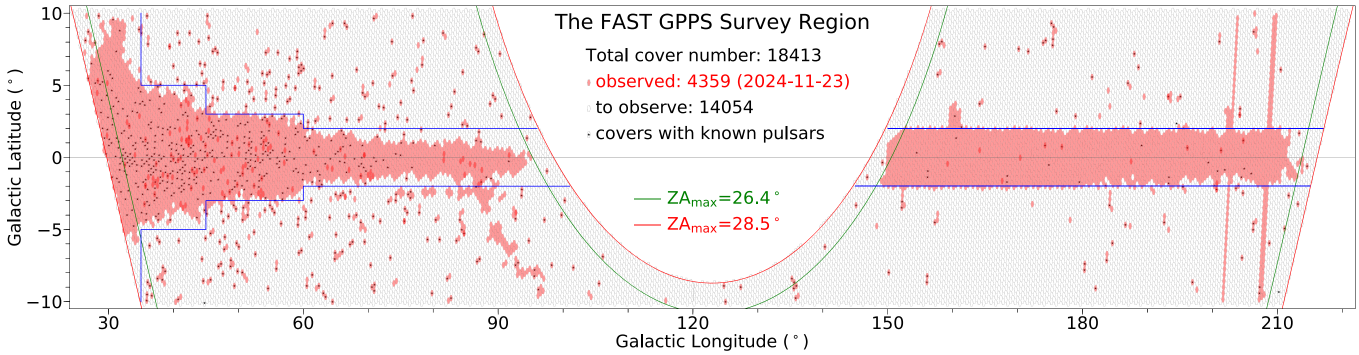

Figure 1. The current progress of the FAST GPPS survey which observes the visible sky regions within ±10° from the Galactic plane. Each point is a *cover* that is a sky area filled by 76 beams of four adjacent pointings by a FAST "snapshot mode" observation. The observed covers are marked with filled color. The covers marked with a star are those with one or more known pulsars. The zenith angle limit for the FAST GPPS survey was set to 26.°4 for a full telescope gain due to the feed illumination and now extends to 28.°5 without significant degradation of the gain and system noise.

Bhattacharyya et al. 2016; Burgay et al. 2019; McEwen et al. 2024; Zhi et al. 2024). Because of the tenuous interstellar medium in the Galactic halo, the dispersion measures (DMs) of pulsars in the halo are often small and can be easily discovered at lower frequencies (Bhat et al. 2023; Tyul'bashev & Tyul'basheva 2023). Pulsars in the Galactic disk suffer more radio wave dispersion, especially those behind H II regions (Han et al. 2021). For example, McEwen et al. (2024) recently surveyed an area of the Galactic plane, and found that the distant pulsars with high DM often have a large scattering which prevents the detection at low frequencies. To detect pulsars in more distant parts of the Galactic disk with larger DMs and large scattering effect, pulsar surveys must be carried out at higher frequencies (Clifton et al. 1992; Johnston et al. 1992; Xu et al. 2011). However, pulsars get much weaker at higher frequencies because they have steep spectra (Han et al. 2016), and pulsars can only be detected by sensitive observations. Also, any improvements in channel bandwidth and sampling rate could lead to a better sensitivity for short-period pulsars, which is very important to detect millisecond pulsars (e.g., Bates et al. 2011).

The significance of pulsar surveys is not just to find pulsars, but to find pulsars with important implications for physics. For example, the Green Bank Telescope 350 MHz drift-scan survey (Boyles et al. 2013) found a pulsar with mass of 2.01 $M_{\rm Sun}$ (Antoniadis et al. 2013). In the multibeam pulsar survey with the Arecibo telescope (Cordes et al. 2006), a millisecond pulsar was found in a highly eccentric orbit (Champion et al. 2008). When the survey data were searched by using the single pulse module, many rotating radio transient (RRAT) sources were discovered (McLaughlin et al. 2006; Burke-Spolaor et al. 2011; Zhou et al. 2023b) as were fast radio bursts (FRBs; Lorimer et al. 2007; Zhou et al. 2023a).

The Five-hundred-meter Aperture Spherical radio Telescope (FAST; Nan 2006), mounted with the *L*-band 19-beam receiver

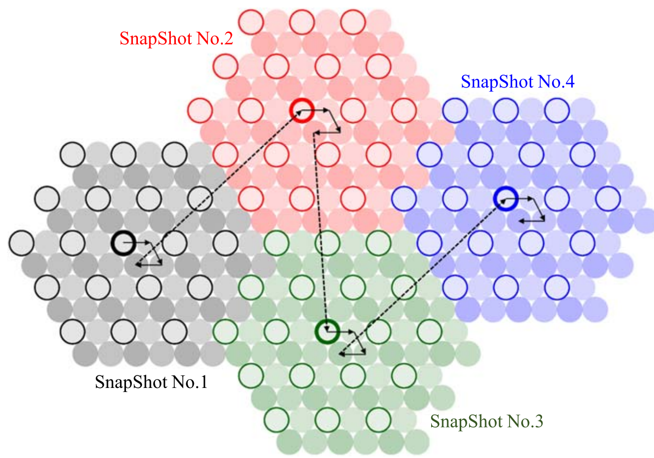

Figure 2. The newly designed "snapshotZ mode" for FAST to observe the four adjacent *covers* which saves the slewing time by 13 minutes. Each *cover* is observed by four adjacent paintings by FAST with the 19-beam *L*-band receiver using the "snapshot mode" (Han et al. 2021).

(Jiang et al. 2020), is the most sensitive single-dish radio telescope in the world to search for pulsars (Han et al. 2021) and to detect hydrogen lines (Hong et al. 2022) or recombination lines (Hou et al. 2022). Since 2020 we have been carrying out the FAST Galactic Plane Pulsar Snapshot (GPPS) survey,[7] and 201 pulsars and one RRAT were published in the first paper (Han et al. 2021). Subsequently, we reported 76 RRATs discovered during the survey (Zhou et al. 2023b). We have also published the timing solutions for 30 pulsars by Su et al. (2023). There are many interesting discoveries. For example, PSR J1953+1844 (gpps0190) is a binary pulsar with an orbital period of 53 minutes (Pan et al. 2023) that is probably a descendant of an ultracompact X-Ray binary (Yang et al. 2023). PSR J1928+1815 (gpps0121) is an eclipsing millisecond pulsar in a highly compact binary with an

[7] http://zmtt.bao.ac.cn/GPPS/

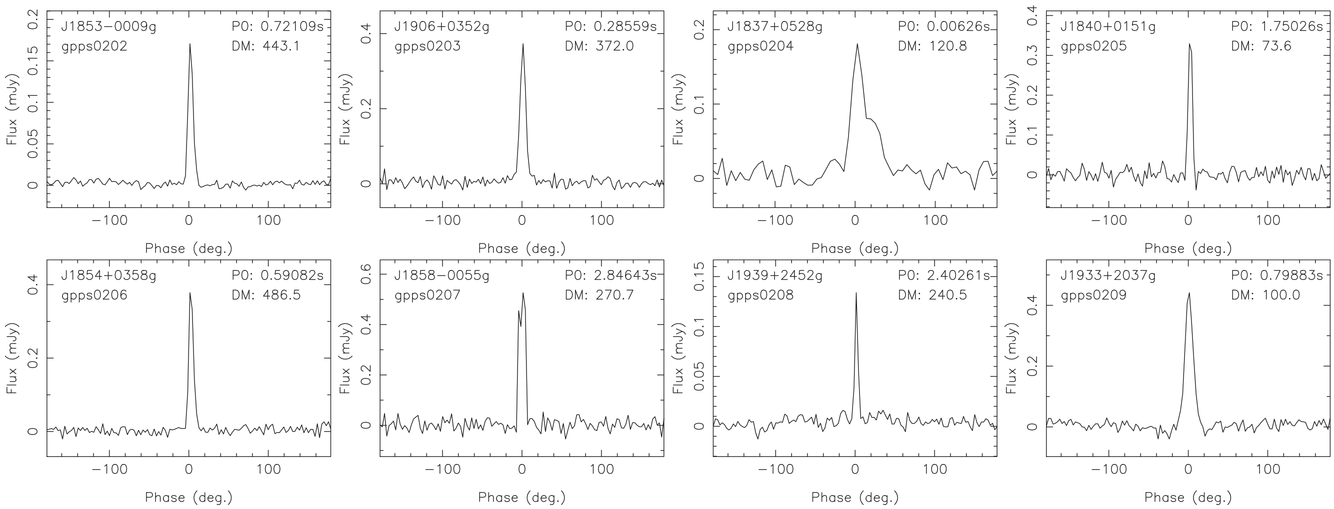

Figure 3. Eight examples of integrated profiles of newly discovered pulsars. The profiles are plotted in the full rotation phase of 360° of a rotation period. The pulsar name, gpps number, period, and DM are noted in each panel. Plots for all pulsars are given in Figure A1 in the Appendix.

Table 1
Examples of the Second Massive Sample of Pulsars Discovered by the FAST GPPS survey

Name[a]	gpps No.	Period (s)	DM ([b])	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25\mathrm{GHz}}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	Ref.
J1853−0009g	gpps0202	0.72110	443.1	18:53:36.2	−00:09	33.0354	−0.5556	12.7	7.2	5.5	7.0	
J1906+0352g	gpps0203	0.28560	372.0	19:06:27.2	+03:52	38.0986	−1.5628	33.7	7.9	11.2	8.5	
J1837+0528g	gpps0204	0.00626	120.8	18:37:40.5	+05:28	36.2535	+5.5477	18.9	3.8	5.9	17.9	
J1840+0151g	gpps0205	1.75041	73.6	18:40:58.6	+01:51	33.3997	+3.1769	20.6	2.5	2.7	5.4	
J1854+0358g	gpps0206	0.59084	486.5	18:54:04.0	+03:58	36.7715	+1.2287	18.7	9.2	11.9	6.1	
J1858−0055g	gpps0207	2.84662	270.7	18:58:05.8	−00:55	32.8614	−1.9064	16.5	6.3	5.6	10.0	
J1939+2452g	gpps0208	2.40253	240.5	19:39:09.8	+24:52	60.3194	+1.4247	7.7	8.1	8.6	4.6	
J1933+2037g	gpps0209	0.79886	100.0	19:33:01.7	+20:37	55.9258	+0.5929	23.6	4.2	3.3	11.6	
J1951+2528g	gpps0210	0.00231	205.1	19:51:27.0	+25:28	62.2360	−0.6780	286.8	7.3	7.9	63.8	
...	...	...	...	...	...	...	...	...	...	...	...	...

Notes. See Table A1 for a complete table of pulsars from gpps0202 to gpps0751 and also http://zmtt.bao.ac.cn/GPPS/ for updates.
[a] "g" indicates the temporary nature, due to position uncertainty of about 1$'$.5.
[b] DM values in this and the following tables all have a unit of pc cm^{-3}.
The last column is for references, and it happens that there are no references for these first pulsars.

orbital period of 3.6 hr, which is the product of the common envelope phase (Yang et al. 2024). By using the FAST GPPS data, we have also discovered five FRBs (Zhou et al. 2023a).

Up to now, we have discovered 751 pulsars, among which we have 107 RRATs, 177 millisecond pulsars, and 160 binary pulsars. In this paper, we publish the second massive discovery of 473 new pulsars after the first and the second GPPS discovery papers (Han et al. 2021; Zhou et al. 2023b). In the companion papers in this volume, we discuss the six millisecond pulsars in compact orbits with massive white dwarf companions (Yang et al. 2025), and present primary results for 116 binary systems (Wang et al. 2025).

2. The Current Status of the FAST GPPS Survey and Follow-up Observations

The FAST GPPS Survey plans to survey the visible sky area within ±10° from the Galactic plane, see details about the survey strategy in Han et al. (2021). The main purpose is to find new pulsars, especially pulsars with short spin periods or short orbital periods. To do the survey, we developed the "snapshot mode" for

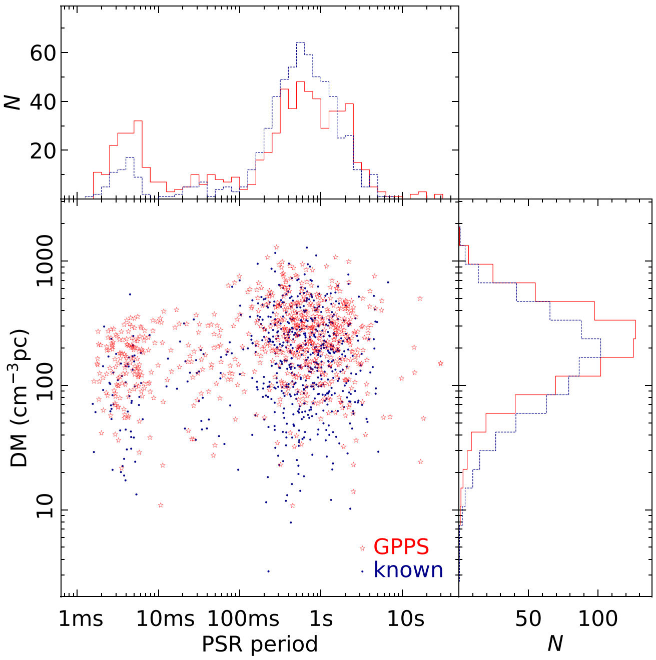

Figure 4. The distribution of DMs and periods of the newly discovered pulsars in the GPPS survey compared to those of previously known pulsars.

FAST observations. Each snapshot observation consists of four adjacent pointings with quick switches of 19 beams to cover a hexagonal sky area of 0.1575 square degrees. The sky area covered by these 76 beams is defined to be a *cover* (Han et al. 2021, see Figure 4 within). There are 18,413 planned *covers* for the survey. After FAST observations in the last 5 yr, we have made good progress on the FAST GPPS Survey, and have observed 4072 *covers*, as shown in Figure 1.

The FAST GPPS observations have been carried out with a full gain of FAST, originally within 26°.4 of the zenith angle but now 28°.5 because we found the snapshot mode can work down to 28°.5 and the telescope gain does not have obvious degradation. In 2023, we tested and developed the "snapshotZ mode" (see Figure 2), which can finish the *four adjacent covers* by using much less slewing time between the covers.

Because of the interstellar medium, radio pulses are dispersed differently at different frequencies. To find pulsars, one has to de-disperse the signal and then add the pulse power from all frequency channels. General pulsar searching involves two steps. One is to consider the dispersion of pulses at different frequencies and de-disperse the power. In this case, the dispersion inside frequency channels is ignored. The other key step is to find the period of the pulses by using the fast Fourier transform (FFT). Currently, the widely used package for pulsar searching is PRESTO developed by Ransom (2001a). We have developed the pipeline (Han et al. 2021) based on PRESTO for the standard pulsar search pipeline and also the acceleration search for binaries.

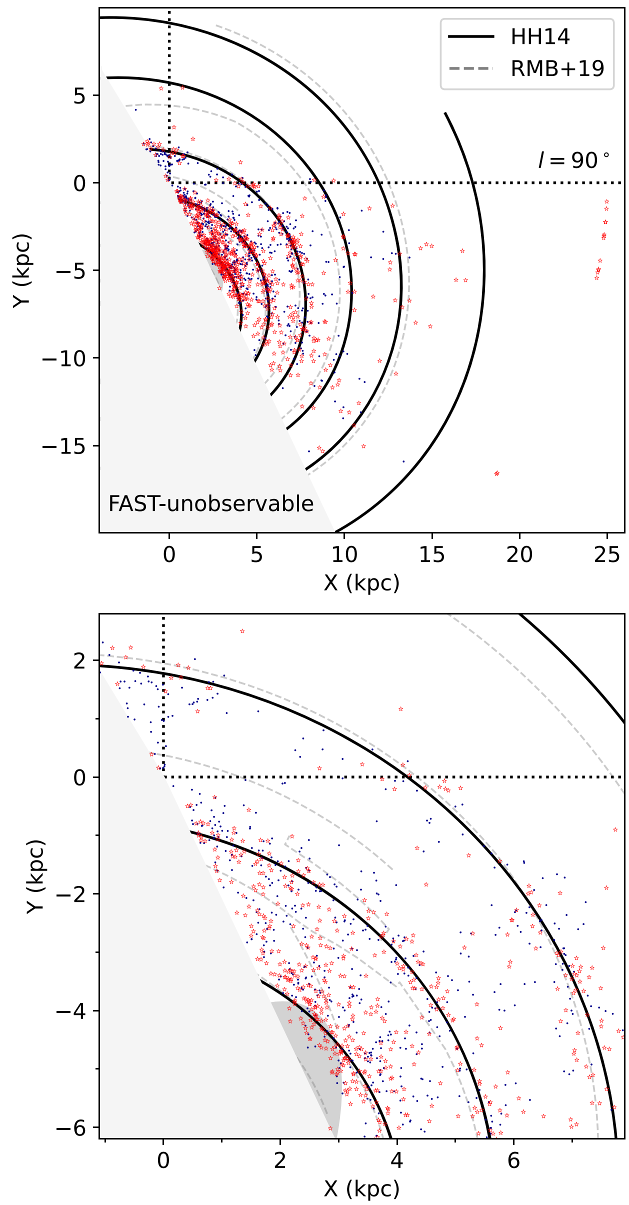

Figure 5. The pulsar distribution in the Galactic disk for the FAST-visible area. The newly discovered pulsars by the FAST-GPPS survey are marked as stars, and the previously known pulsars by crosses. The solid and dashed curves indicate the spiral arms (Hou & Han 2014; Reid et al. 2019, HH 14, RMB+19) from the inner to outer: the Scutum Arm, the Sagittarius Arm (the first interior to the Sun), the Perseus arm (the first outside the Sun), the Perseus+1 arm, the Perseus+2 arms, and the Perseus+3 arm, respectively. The zoomed region is shown in the lower panel to see the high density of pulsars. We discovered many pulsars around the Scutum Arm, the Sagittarius Arm, and also some in the Perseus arm.

We have already acquired more than 12 PB survey data, which have been processed in at least three runs by using three clusters of computational nodes, one run for normal pulsar search, one for single pulse search (Zhou et al. 2023b) and the other for acceleration search for binaries. The data processing

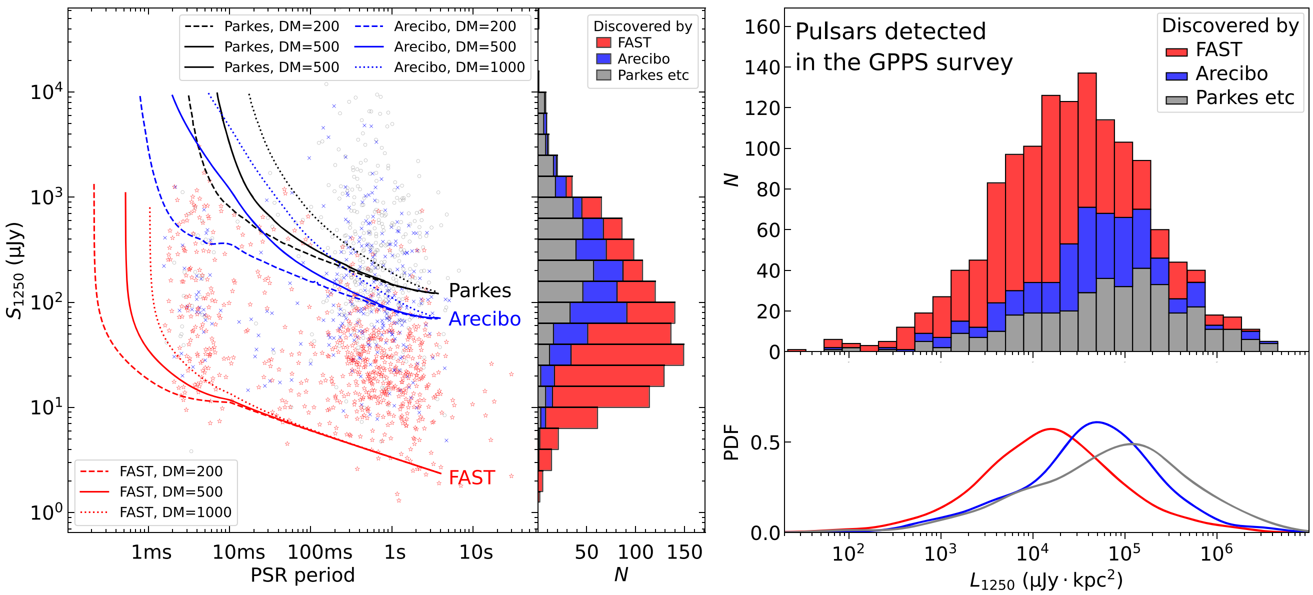

Figure 6. The distributions of flux densities and luminosities of pulsars observed by FAST. In the left panel, the sensitivity curves for different DMs of the FAST GPPS survey are given, compared to those for the Arecibo and Parkes surveys (Manchester et al. 1996; Cordes et al. 2006), together with the histogram of the three surveys. The right panel shows that the FAST GPPS pulsars have much lower flux densities and dominate at the lower end of luminosity distributions. The probability distribution functions (PDFs) are smoothed curves for the normalized fraction distribution.

frame for the FAST GPPS survey was presented in Han et al. (2021) and has not been changed. Nevertheless, almost all flow charts have been updated and optimized for many versions for the goal of fast processing of the survey data. For example, we have also used different strategies for mitigation of radio frequency interference, the normal RFIFIND in PRESTO for normal pulsar searching, and the new outlier detection algorithm called Inter-Quartile Range Mitigation (IQRM) developed by Morello et al. (2022) has been used for the radio frequency interference cleaning during acceleration search of close binaries.

For any candidates standing out from these searches, we make the verification observations with the central beam M01 targeting the best-estimated position (occasionally a bright pulsar shown in a few adjacent beams) for 15 minutes, and data from the other 18 beams are also recorded for pulsar searching. The package PSRCHIVE (Hotan et al. 2004) was extensively used for folding pulsar data and polarization analysis.

3. New Survey Results

Up to now, the FAST GPPS survey has uncovered 751 pulsars, as listed on the web page.[8] Their periods and DM values have been well-determined, except for some RRATs whose periods cannot be determined from only a few pulses detected by FAST (Zhou et al. 2023b). In addition to the publication of the massive pulsar sample in the first GPPS paper, we here publish the second massive sample in Table A1 in the Appendix and several examples in Table 1 in the main text. The profiles are plotted for examples in Figure 3 and for all pulsars in Figure A1 in the Appendix.

In the sky regions within $\pm 10^\circ$ from the Galactic plane where our FAST GPPS survey is observing, there are 800 previously known pulsars in 600 covers (there are more than one pulsar in some covers). To verify our FAST observation system the covers with known pulsars have always been observed during some survey sessions.

As shown in Figure 4, the newly discovered pulsars found in the FAST GPPS survey generally have larger DMs than previously known pulsars. Though the number of newly discovered normal pulsars is still less than that of the previously known pulsars, we discovered twice the number of pulsars with a period of less than 100 ms compared to the previously known cases, which demonstrates the superior sensitivity of the FAST GPPS survey compared to previous experiments.

One can estimate the distances of all newly discovered pulsars by using the Galactic electron density distribution models, the NE2001 model (Cordes 2004) and the YMW16 model (Yao et al. 2017), as listed in Table A1. With these distances, we get the pulsar distribution projected onto the Galactic plane, as shown in Figure 5. We discover many pulsars around the Scutum Arm (the most inner arm in the figure), the Sagittarius Arm (the first interior to the Sun), and

[8] http://zmtt.bao.ac.cn/GPPS/GPPSnewPSR.html

Table 2
Key Parameters of 52 Known Pulsars are Updated by the FAST Observations

PSR Name (1)	Reference (2)	Period (s) (3)	DM (pc cm^{-3}) (4)	R.A. (2000) (hh:mm:ss) (5)	Decl. (2000) (±dd:mm:ss) (6)	Updated items (7)	Period (s) (8)	Epoch for *P* (MJD) (9)	DM (σ) (pc cm^{-3}) (10)	R.A.(2000) (hh:mm:ss) (11)	Decl.(2000) (±dd:mm) (12)
J0555+3948	(1)	1.14691	37	05:55	+39:48	Posi	1.14690	59358.273535	36.2(9)	05:55:07.61	+39:51:38
J0608+00	(2)	1.0762	48	06:08:49	+00:39	Posi	1.07616	59636.544596	48.7(9)	06:08:47.49	+00:44:18
J1808+00	(3)	0.42512	141	18:08:19	+00:34	Posi	0.42512	59383.752566	149.1(3)	18:08:26.55	+00:38:25
J1818+03	(4)	0.799	99	18:18	+03	Posi	0.79919	60348.063356	98.7(6)	18:19:15.23	+03:22:48
J1822+02	(4)	1.508	103.8	18:22	+02	Posi	1.50815	60601.376531	105.8(12)	18:22:43.14	+02:29:14
J1827+0022	(5)	0.3753	96	18:27	+00:22	Posi	0.37517	59374.767128	95.8(6)	18:27:05.35	+00:25:02
J1830−0131	(6)	0.15251	95.7	18:30:19.61	−01:31:48.1	P	0.45754	59454.544345	97.3(4)	18:30:17.41	−01:31:56
J1833−0209	(7)	0.29193	325.4	18:33:05.41	−02:09:16.4	P	0.58386	59485.470234	325.9(5)	18:33:04.71	−02:09:06
J1835+00	(8)	0.79008	136.1	18:35	+00	Posi	0.79007	59743.761277	134.6(6)	18:35:48.98	+00:31:29
J1837+03	(8)	0.01070	115.5	18:37	+03	Posi	0.01070	59573.183162	115.665(9)	18:37:29.47	+03:55:32
J1838−01	(9)	0.18330	320.4	18:38:30	−01:01	Posi	0.18330	59485.473821	311.9(1)	18:38:42.71	−01:00:50
J1839+0543	(10)	0.05793	113.8	18:39:00	+05:43	Posi	0.05793	59186.239591	113.9(1)	18:39:25.73	+05:42:36
J1840+03	(8)	0.00583	80.9	18:40	+03	Posi	0.00583	60358.071487	80.79(4)	18:40:11.41	+03:22:58
J1844−0256	(11)	0.27296	822	18:44:53	−02:56:42	Posi	0.27299	59903.318761	824.8(9)	18:44:29.22	−02:54:17
J1846−0049	(5)	0.02124	45.4	18:46	−00:49	Posi	0.02124	59511.374079	45.22(5)	18:46:14.01	−00:50:08
J1848+12	(12)	0.75473	139	18:48:30	+12:50	Posi	0.75471	59409.662255	127.9(6)	18:48:05.80	+12:54:28
J1854−0154	(5)	0.68039	590	18:54	−01:54	Posi, DM	0.68059	60023.998247	569.4(8)	18:54:32.30	−01:50:38
J1858−0200	(5)	0.48732	191	18:58	−02:00	Posi, P, DM	1.46204	59509.405226	182.6(12)	18:57:46.04	−01:54:52
J1917+2441	(5)	0.00440	82	19:17	+24:41	Posi	0.00440	59700.851367	82.07(1)	19:17:32.83	+24:41:18
J1919+04	(8)	0.00396	142.8	19:19	+04	Posi	0.00396	59550.314648	142.780(5)	19:18:59.07	+04:00:26
J1925+19	(13)	1.91635	328	19:25:26	+19:04	Posi	1.91638	59854.557819	333.2(15)	19:25:14.00	+19:07:36
J1929+00	(3, 14)	1.16690	42.8	19:29:28	+00:26	Posi	1.16691	59404.703745	43.8(9)	19:29:26.12	+00:31:09
J1931+30	(3, 15)	0.58213	53.8	19:31:28	+30:35	Posi	0.58213	59395.829309	53.5(5)	19:31:10.41	+30:32:04
J1934+0906	(5)	0.00466	72.4	19:34	+09:06	Posi	0.00466	59911.397634	72.37(4)	19:34:13.57	+09:06:28
J1936+13	(8)	0.00434	168.0	19:36	+13	Posi	0.00434	59547.372147	167.97(1)	19:36:05.53	+12:59:18
J1938+14a	(4)	1.661	114	19:38	+14	Posi	1.66145	59440.648283	113.4(13)	19:37:39.56	+14:16:48
J1939+10	(3, 15)	2.31144	74.0	19:39:11	+10:45	Posi	2.30873	59990.033297	73.2(18)	19:39:21.16	+10:49:28
J1940+14	(16)	1.279	70	19:40:15	+14:37	Posi	1.27436	60513.735978	69.5(10)	19:40:06.14	+14:27:37
J1942+3941	(17)	1.35329	104.5	19:42:22.05	+39:41:41.4	DM	1.35329	59427.660848	95.1(11)	19:42:22.27	+39:41:48
J1943+2851	(5)	0.736	228.5	19:43	+28:51	Posi	0.73782	60326.134222	231.7(23)	19:43:23.09	+28:52:28
J1944+16	(8)	0.00243	170.8	19:44	+16	Posi	0.00243	59700.920529	170.87(3)	19:44:15.32	+16:54:44
J1945+07	(2)	1.0739	62	19:45:55	+07:17	Posi	1.07403	59413.740988	62.5(9)	19:45:44.74	+07:20:28
J1945+17	(23)	0.6042	167.7	19:45	+17	Posi	0.60412	60513.757082	172.4(5)	19:45:17.89	+17:40:53
J1947+10	(3, 15)	1.11094	128.76	19:47:36	+10:44	Posi	1.11094	59432.673850	129.0(9)	19:47:20.96	+10:41:60
J1956+35	(18)	...	153.7	19:56:36	+35:36:49	Posi,P	0.87552	60488.820901	153.1(7)	19:56:27.74	+35:44:38
J1958+2213	(19)	1.0502	85	19:58:34	+22:13	Posi	1.05038	59560.385043	88.6(10)	19:58:45.52	+22:14:27
J1958+2332	(5)	...	204.5	19:58	+23:32	P	8.07375	60515.645683	201.5(22)	19:58:01.19	+23:31:33
J2005+14	(18)	...	51.2	20:05:15	+14:37:00	Posi,P	2.33214	60519.672616	50.3(19)	20:04:53.97	+14:47:54
J2025+2133	(20)	0.6235	70.8	20:25	+21:33	Posi	0.62348	59428.747968	71.6(5)	20:25:56.55	+21:37:00
J2030+31	(18)	...	131.4	20:30:29	+31:29:02	Posi,P	1.01470	60516.756135	131.6(8)	20:30:12.15	+31:36:23
J2041+46	(4)	1.160	304	20:41	+46	Posi	1.15982	59701.010270	307.7(9)	20:41:30.99	+45:51:56
J2102+38	(21)	1.19	85	21:02	+38	Posi	1.18990	59370.915960	86.3(10)	21:02:02.10	+37:58:19
J2125+52	(18)	...	262.8	21:25:32	+52:19:23	P,Posi	5.80150	60521.751530	261.9(46)	21:25:50.78	+52:18:20
J2153+44	(18)	...	142.7	21:53:26	+44:56:43	P,Posi	2.89297	60502.875475	142.7(23)	21:53:18.84	+45:07:08
J2300+50	(18)	...	58.3	23:00:24	+50:21:13	P	3.64840	60488.924604	59.5(29)	23:00:22.28	+50:24:08
J2300+52	(16)	0.4265	82	23:00:30	+52:20	Posi	0.42610	60489.909318	83.7(13)	23:00:05.18	+52:24:34

Table 2
(Continued)

PSR Name (1)	Reference (2)	Period (s) (3)	DM (pc cm^{-3}) (4)	R.A. (2000) (hh:mm:ss) (5)	Decl. (2000) (±dd:mm:ss) (6)	Updated items (7)	Period (s) (8)	Epoch for P (MJD) (9)	DM (σ) (pc cm^{-3}) (10)	R.A.(2000) (hh:mm:ss) (11)	Decl.(2000) (±dd:mm) (12)
J0928+06*	(2)	2.0604	50	09:28:44	+06:14	Posi	2.06025	59485.118013	52.0(17)	09:28:28.14	+06:14:15
J1656+00*	(22)	1.49785	46.9	16:56:41	+00:26	Posi	1.49796	59515.284575	44.9(12)	16:56:30.17	+00:17:47
J1726−00*	(2)	1.3086	57	17:26:23	−00:15	Posi	1.30762	59541.278735	58.6(20)	17:26:28.88	−00:22:37
J1749+16*	(22)	2.31165	59.6	17:49:29	+16:24	Posi	2.31105	59517.299127	57.7(19)	17:49:04.52	+16:29:05
J1802+03*	(2)	0.6643	77	18:02:44	+03:38	Posi	0.66431	59517.378403	77.7(15)	18:02:38.12	+03:45:38
J2057+2133*	(20)	1.1667	72.2	20:57	+21:33	Posi	1.16662	59541.416868	72.3(28)	20:57:41.71	+21:28:33

Note. Column (1): Pulsar name. The six high latitude pulsars with superscript "*" get parameters measured in a project led by J. Xu; References in Column (2): (1) Barr et al. (2013); (2) Deneva et al. (2013); (3) Camilo et al. (1996); (4) http://astro.phys.wvu.edu/GBNCC/; (5) http://groups.bao.ac.cn/ism/CRAFTS/CRAFTS/; (6) Lorimer et al. (2006); (7) Ng et al. (2015); (8) https://palfa.nanograv.org/; (9): Knispel et al. (2013); (10) Zhi et al. (2024); (11) Burgay et al. (2006); (12) Edwards et al. (2001); (13) Lorimer et al. (2013); (14) Sanidas et al. (2019); (15) Deneva et al. (2024); (16) Tyul'bashev et al. (2024); (17) Cruces et al. (2020); (18) https://www.chime-frb.ca/galactic; (19) Tyul'bashev et al. (2020); (20) Wang et al. (2021); (21) Hessels et al. (2008); (22) Deneva et al. (2016); (23) Parent et al. (2022); Columns (3)–(6): parameters in reference; Column (7): items updated by FAST; Columns (7)–(12): parameters obtained from the GPPS survey or FAST observations. Newly measured DM has an uncertainty in brackets.

Table 3
Previously Known Pulsars Not Detected in the FAST-GPPS Survey

PSR Name	Period (s)	DM (pc cm^{-3})	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm:ss)	Notes and references
(1)	(2)	(3)	(4)	(5)	(6)
High-energy / Radio-quiet Pulsars					
J0633+0632	0.29740	...	06:33:44.2	+06:32:34.9	Abdo et al. (2009), Ray et al. (2011)
J0633+1746	0.23710	...	06:33:54.2	+17:46:12.9	Halpern & Holt (1992), Caraveo et al. (1998)
J1846+0919	0.22555	...	18:46:26.0	+09:19:46	Saz Parkinson et al. (2010)
J1906+0722	0.11152	...	19:06:31.2	+07:22:55.8	Clark et al. (2015)
J1932+1916	0.20821	...	19:32:19.7	+19:16:39	Pletsch et al. (2013)
J1954+2836	0.09271	...	19:54:19.2	+28:36:06	Saz Parkinson et al. (2010)
J1958+2846	0.29039	...	19:58:40.1	+28:45:54	Abdo et al. (2009), Ray et al. (2011)
J2017+3625	0.16675	...	20:17:55.8	+36:25:07.9	Clark et al. (2017)
J2021+4026	0.26532	...	20:21:30.0	+40:26:45.1	Abdo et al. (2009), Ray et al. (2011)
J2028+3332	0.17671	...	20:28:19.9	+33:32:04.4	Pletsch et al. (2012)
J2030+4415	0.22707	...	20:30:51.4	+44:15:38.1	Pletsch et al. (2012)
J2111+4606	0.15783	...	21:11:24.1	+46:06:31.3	Pletsch et al. (2012)
J2139+4716	0.282849	...	21:39:56.0	+47:16:13	Pletsch et al. (2012)
J2034+3632	0.00365	...	20:34	+36:32	https://einsteinathome.org/gammaraypulsar/FGRP1_discoveries.html
J0501+4516	5.762097	...	05:01:06.8	+45:16:33.9	Gogus et al. (2008), Göğüş et al. (2010); SGR
J0635+0533	0.033856	...	06:35:18	+05:33:11	Cusumano et al. (2000), X-ray pulsation
J1849-0001	0.038523	...	18:49:1.6	-00:01:17.4	Gotthelf et al. (2011), X-ray pulsar
J1852+0033	11.558713	...	18:52:46.6	+00:33:20.9	Zhou et al. (2014), transient magnetar
J1852+0040	0.104913	...	18:52:38.6	+00:40:19.8	Gaensler et al. (2005); X-ray pulsar
J1907+0919	5.198346	...	19:07:14.3	+09:19:20.1	= SGR 1900+14; Kouveliotou et al. (1999), Frail et al. (1999), Mereghetti et al. (2006)
J1935+2154	3.24498	...	19:34:55.6	+21:53:48.2	= SGR 1935+2154
AX_J1845.0−0258	6.9712	...	18:44:54.68	−02:56:53.1	Torii et al. (1998), Gotthelf & Vasisht (1998), Tam et al. (2006)
SGR_2013+34	...	...	20:13:56.9	+34:19:48	Sakamoto et al. (2011)
Weak / Scattered / Binary Pulsars					
J0454+4529	1.389137	20.8	04:54:59.3	+45:29:46.7	Michilli et al. (2018), Tan et al. (2020)
J1848-0129A	0.01978	491.1	18:48	−01:29	https://www.trapum.org/discoveries/
J1848-0129C	0.00644	489.2	18:48	−01:29	https://www.trapum.org/discoveries/
J1848-0129D	0.0171	458.0	18:48	−01:29	https://www.trapum.org/discoveries/
J1848-0129E	0.00454	479.9	18:48	−01:29	https://www.trapum.org/discoveries/
J1848-0129F	0.00417	520.1	18:48	−01:29	https://www.trapum.org/discoveries/
J1907+0602	0.106633	82.1	19:07:54.7	+06:02:16.9	Abdo et al. (2009, 2010)
J1953+1846C	0.02893	116.2	19:53:46.5	+18:46:45	Pan et al. (2021)
J1953+1846D	0.10067	119.0	19:53:46.5	+18:46:45	Pan et al. (2021)
J2016+3711	0.050806	429.5	20:16:9.14	+37:11:10.4	Liu et al. (2024); 15.5 μJy
J2022+3842	0.048579	429.1	20:22:21.6	+38:42:14.8	Scatter.
Radio Transients / Nulling Pulsars					
J1855+0626	0.528832	253.8	18:55:25	+06:26:53	Parent et al. (2022); 98.4% nulling.
J1905+09	3.48784	288.0	19:05:33.3	+08:57:30.2	https://palfa.nanograv.org/ (posi by Ryan)
J1910+0517	0.308048	300	19:10:37.9	+05:17:56.1	Lyne et al. (2017); intermittent
J1911+00	6.94	100	19:11:48	+00:37	McLaughlin et al. (2006), Keane et al. (2011)
J1905+0414	0.15648	381.1	19:05	+04:14	Patel et al. (2018). P?
J1928+15	0.403	242	19:28:20	+15:13	Deneva et al. (2009); intermittent
J1929+1357	0.866927	150.7	19:29:10.6	+13:57:35.9	Lyne et al. (2017); intermittent
J1933+2421	0.81369	106.0	19:33:37.8	+24:36:39.6	Stokes et al. (1985), Kramer et al. (2006)
J2108+4516	0.577231	83.5	21:08:23.3	+45:16:24.9	Good et al. (2021)
Other Reasons for no Detection					
J0324+5239	0.33662	115.5	03:24:55.4	+52:39:31.3	Barr et al. (2013)
J1914+0805	0.455499	344.4	19:14:05.5	+08:05:12.7	Parent et al. (2022)
J0553+4111	0.559493	37.9	05:53:23.8	+41:11:38.9	Wu et al. (2023)

Table 3
(Continued)

PSR Name (1)	Period (s) (2)	DM (pc cm^{-3}) (3)	R.A. (2000) (hh:mm:ss) (4)	Decl. (2000) (±dd:mm:ss) (5)	Notes and references (6)
J0611+04	1.67443	69.9	06:11:18	+04:06	Deneva et al. (2016)
J0534+2200	0.033392	56.8	05:34:31.9	+22:00:52.0	Crab pulsar / Saturated
J1905+0154B	0.004968	192.0	19:05	+01:54	Hessels et al. (2007)

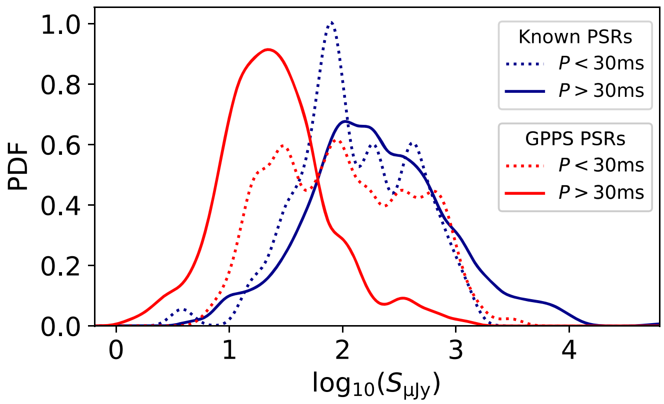

Figure 7. Comparison of the PDFs for millisecond pulsars and normal pulsars discovered in the FAST GPPS survey and others, represented by the smoothed curves for normalized fraction along the flux density.

also some in the Perseus arm (the first outside the Sun). For almost all of these pulsars, we recorded polarization data in our FAST verification observations. We will present their polarization profiles and Faraday rotation measures (RMs) in another paper by Jun Xu et al. (2025, in preparation).

With these estimated distances, one can derive the luminosity of pulsars based on the measured flux density at 1250 MHz. The pulsars discovered by FAST in the GPPS survey dominate in the flux-density range of 10–100 μJy and many in the level of several μJy, see Figure 6. The results of the FAST GPPS survey contribute decisively to the lower end of pulsar luminosity distribution.

3.1. Verification of Known Pulsars

Up to now, we have observed 600 covers with previously known pulsars and detected 670 pulsars. Those known pulsars are generally very strong when using FAST and are often detected in several beams of the *L*-band 19 beam receivers. Some pulsars were published in some papers or made public on some web pages without an accurate position. Our FAST observations can give the position of a detected pulsar accurate to around 1′ (Han et al. 2021), depending on how strong the pulsar is and in how many of the 19 beams the pulsar appears. For pulsars without a period or a DM (e.g., high energy pulsars) and with a very coarse position, FAST observations detect them and give the updated parameters, see 52 pulsars listed in Table 2.

Note, however, that some previously known pulsars were not detected during the FAST GPPS survey for several reasons.

Table 4
A list of 34 Millisecond Pulsars with TOA Accuracy Better than 3 μs by FAST 15 minute Observations

Name	GPPS No.	Period (s)	σ_{TOA} (μs)
J2023+2853	gpps0201	0.01132890	0.18
J1918+0621	gpps0494	0.002104	0.31
J1955+3114g	gpps0692	0.003357	0.56
J1821+0007g	gpps0613	0.004222	0.58
J1859-0224g	gpps0466	0.006170	0.82
J1857+0642	gpps0236	0.00353	0.84
J1930+1708g	gpps0274	0.00228	0.84
J1814+0045g	gpps0549	0.002309	0.95
J1939+1848g	gpps0500	0.003357	1.0
J1924+2027g	gpps0138	0.00195	1.1
J1845+0201g	gpps0547	0.004309	1.2
J0622+0338g	gpps0388	0.008771	1.3
J1846+0507g	gpps0614	0.003073	1.4
J0520+3722g	gpps0538	0.007915	1.5
J1913+0152g	gpps0702	0.003227	1.5
J2027+2837g	gpps0700	0.004794	1.5
J1908+0949g	gpps0128	0.00905	1.8
J1835+0158g	gpps0636	0.003320	2.0
J1906-0200g	gpps0584	0.002530	2.0
J1943+2210	gpps0227	0.01287	2.0
J1904+0553A	gpps0039	0.0049080	2.3
J1912+1416	gpps0169	0.00317	2.3
J1915+0601g	gpps0683	0.004011	2.5
J1832+0113g	gpps0665	0.006345	2.6
J1929+1259g	gpps0345	0.00285	2.6
J1957+2754g	gpps0437	0.003313	2.6
J0408+4955g	gpps0638	0.011442	2.7
J1930+1403	gpps0013	0.00321	2.7
J1908+1036	gpps0114	0.01069	2.8
J1920+0129g	gpps0230	0.00358	2.8
J2007+3343g	gpps0604	0.002681	2.8
J1903+0839	gpps0100	0.0046212	2.9
J1931+2333g	gpps0675	0.003860	2.9
J1908+0705g	gpps0278	0.00199	3.0

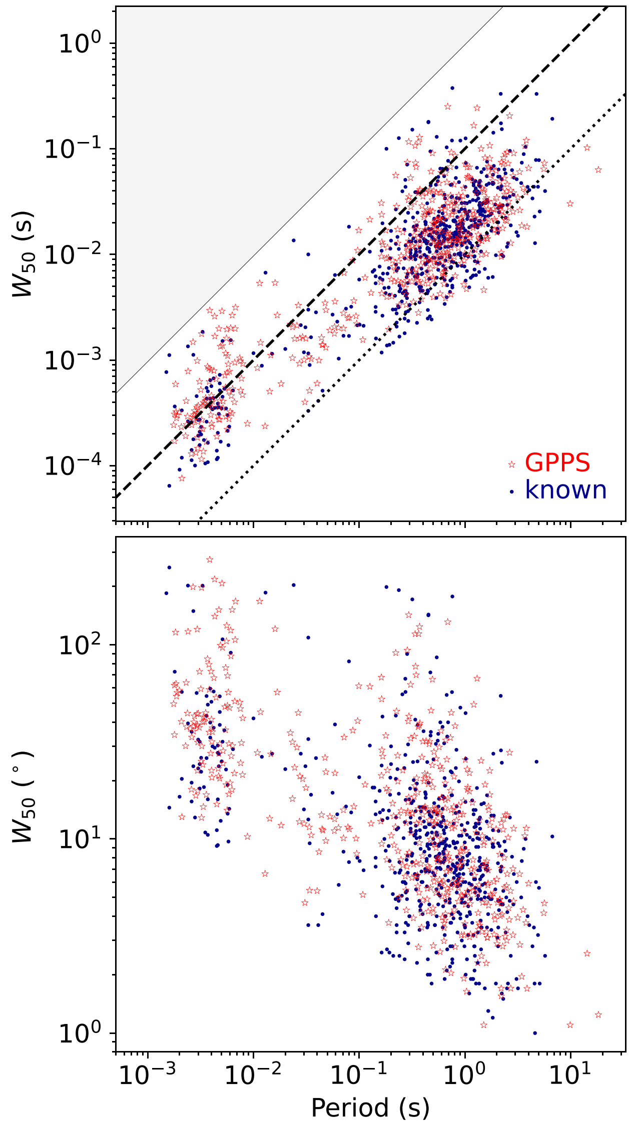

Figure 8. The pulse width W_{50} at the 50% level of the peak against the pulsar period. The top panel is for W_{50} in units of second, and the lower panel is for units of rotation phase in degree. The light gray area is the impossible area with $W_{50} > P$. The dashed and dotted lines are drawn for $W_{50} = P/10$ and $W_{50} = P/100$, respectively. The open stars are for the newly discovered GPPS pulsars, and the dots are the known pulsars with pulse width measured in Wang et al. (2023). We have checked these outstanding dots with low W_{50} and found that these pulsars have many components but only one is very sharp and dominates the W_{50}.

First, some pulsars with very coarse positions have not been detected, mainly because the covers we observed probably have not yet been on the real position of pulsars. Second, some pulsars in globular clusters (Pan et al. 2021) are weak and could not be detected by a 5 minute FAST observation during the GPPS survey. Third, some pulsars are γ-ray bright and radio-quiet and hence not detectable even by FAST. Fourth, it is also

Table 5
Newly Discovered Pulsars from the FAST GPPS Survey Showing Nulling, Mode-changing or Drifting Behaviors

PSR Jname	GPPS No.	Period (s)	DM ([a])	Features
J0514+4009g	gpps0556	2.6255	106.5	drifting
J0630+1002g	gpps0649	2.8815	149.3	drifting
J1810−0100g	gpps0570	1.1062	78.1	nulling; drifting
J1819−0040g	gpps0597	0.1601	57.9	modulation
J1820+0006g	gpps0629	2.4050	187.9	nulling; drifting
J1822+0044g	gpps0674	0.9989	54.0	nulling; drifting
J1825−0208g	gpps0483	3.3074	192.9	nulling; drifting
J1827−0125g	gpps0397	0.3380	98.0	modulation
J1832+0203g	gpps0664	1.2128	226.4	drifting
J1835−0112g	gpps0253	0.5996	316.7	drifting
J1835−0149g	gpps0395	1.2776	102.3	drifting
J1838+0044g	gpps0005	2.2032	229.6	nulling; drifting
J1838−0014g	gpps0445	0.3605	282.8	modulation
J1840−0141g	gpps0374	1.9268	279.7	nulling; drifting
J1842+0131g	gpps0438	1.5903	115.4	modulation
J1843−0127g	gpps0363	2.1649	450.8	nulling
J1845−0229Ag	gpps0493	0.6577	832.0	modulation
J1846−0211g	gpps0456	0.7882	838.0	modulation
J1847+0614g	gpps0165	1.6631	273.0	drifting
J1847−0048g	gpps0337	0.5825	667.0	modulation
J1848+0127g	gpps0035	0.5340	77.0	mode-changing
J1848+1245g	gpps0223	0.2482	100.0	drifting
J1849+0225g	gpps0116	1.4745	259.9	mode-changing
J1849+0340g	gpps0184	1.6667	349.5	nulling; drifting
J1851+0501g	gpps0408	2.3274	341.3	drifting
J1852+0421g	gpps0364	3.1609	294.3	nulling
J1852−0033g	gpps0173	1.3690	321.6	drifting
J1854−0230g	gpps0574	0.6875	550.5	drifting;mode-changing
J1855−0115g	gpps0360	2.5623	261.7	nulling
J1856−0134g	gpps0402	0.3819	236.2	mode-changing
J1857−0120g	gpps0384	1.2226	353.9	drifting
J1858+0026g	gpps0094	4.7147	415.3	nulling; drifting
J1901−0104g	gpps0401	0.7395	261.2	modulation
J1903+1728g	gpps0669	1.7166	150.3	drifting
J1905+0935g	gpps0153	1.6345	418.0	nulling; drifting
J1906+1211g	gpps0458	3.8050	292.4	nulling
J1909+0310g	gpps0447	1.9721	111.0	modulation
J1909+0423g	gpps0436	0.5116	254.9	drifting
J1919+1527g	gpps0130	1.3715	697.5	mode-changing
J1921+0851g	gpps0234	0.9567	101.0	nulling; drifting
J1921+1341g	gpps0088	4.6035	754.9	nulling
J1922+1512g	gpps0385	2.3572	395.0	nulling
J1924+1923g	gpps0002	0.6893	384.9	mode-changing
J1924+2037g	gpps0192	0.6848	82.3	nulling
J1926+1631g	gpps0053	0.6784	196.7	drifting
J1935+1901g	gpps0407	0.8973	362.3	nulling
J1937+1358g	gpps0240	2.6454	174.8	nulling; drifting
J1939+2352g	gpps0150	2.1455	415.5	nulling
J1939+2453g	gpps0208	2.4025	240.5	nulling
J1944+1934g	gpps0678	3.4453	241.4	nulling; drifting
J1945+2410g	gpps0225	2.3776	478.4	drifting
J1959+3141g	gpps0617	0.5145	340.6	drifting
J2001+2856g	gpps0486	1.4456	233.1	drifting
J2011+3006g	gpps0136	2.5057	12.0	drifting
J2011+3521g	gpps0610	0.9432	438.1	nulling; drifting
J2026+3656g	gpps0344	1.7855	280.7	nulling

Table 5
(Continued)

PSR Jname	GPPS No.	Period (s)	DM ([a])	Features
J2029+4453g	gpps0422	1.3614	333.2	drifting
J2051+4434g	gpps0085	1.3031	616.0	drifting; mode-changing

Note.
[a] DM values have a unit of pc cm^{-3}.

possible that some pulsars are just nulling or eclipsed during the 5 minute observation for the GPPS survey. See the list of FAST undetected pulsars in Table 3.

3.2. Pulsars Independently Discovered by Others

After we detect any pulsar, we immediately compare its period and DM with the values of all known pulsars which we collected for all known pulsars. The database of known pulsars is updated every month or two. All new pulsars have to be verified by further FAST observations. After we get some tens of new pulsars, we often update our GPPS web page by adding these newly discovered pulsars.

For a few cases, we published our discoveries on the web page, but later we found someone published an object on their web page or paper earlier than ours, showing a similar DM without a period and/or a very coarse position, or a similar period without DM and/or position. Often hard to recognize, we withdrew and replaced the pulsar in question with a newer discovered one in a new version of the web page with a mark “NewItem4misID”. All previous versions of the web page are kept there for tracking.

Some pulsars are independent discoveries that should be shared with other authors. Generally several months after we published some new pulsars on the web page, we got an email telling us that some pulsars had been found by using data from other telescopes, but no public information was ever available, and their team indeed had even made some follow-up observations. We understand these pulsars are in fact independent discoveries. For example, PSR J1851+1021g (gpps0258) and J1901+1316g (gpps0426) were also detected by Sengar et al. (2023) from the archive Parkes pulsar survey data. PSR J1845+0200 (gpps0547) is a bright millisecond pulsar discovered on July 8th, 2022 and later confirmed by FAST. We put on the web on April 11th, 2023. After we completed eight follow-up observations and determined the binary orbit had a period of 5.3 days, we received an email notice from Dr. H. T. Cromartie on April 11th, 2024 that this pulsar was discovered by Dr. J. Deneva in 2016 in a Fermi unassociated source using Arecibo, and Dr. Cromartie had some follow-up timing and presented in her PhD thesis (Cromartie 2020). The relevant information on this pulsar was first published by Smith et al. (2023) on Decmber 1st, 2023. We understand that this is a perfectly independent discovery, and we now have got its timing solution as shown in the GPPS binary pulsar paper by Wang et al. (2025).

Table 6
Properties of Single Pulses for Newly Discovered Galactic Transient Sources by FAST

ObsDate	No.	TOA (MJD)	S/N	W_{50} (ms)	$F_{1250\mathrm{MHz}}$ (mJy ms)
J1905+1200g (gpps0712)					
20230727	1	60151.69484912	12.7	25.3	94.4
20230727	2	60151.69504097	7.3	20.6	31.2
20240125	1	60334.09010890	6.2	67.4	37.5
20240125	2	60334.09164371	13.1	83.3	159.2
J1914+1053g (gpps0713)					
20191123	1	58810.34124023	16.6	92.5	182.9
20191123	2	58810.35130488	17.6	111.1	165.4
20191123	3	58810.38946132	6.5	44.4	26.4
20191124	1	58811.37380287	24.8	58.5	274.3
J1913+1058g (gpps0714)					
20191123	1	58810.35640275	11.2	19.0	52.6
20191124	1	58811.35026513	15.2	11.6	56.4
J1930+1713g (gpps0715)					
20230904	1	60191.60094709	27.4	340.3	604.4
20240413	1	60412.97178654	11.7	79.8	258.6
J1859−0233g (gpps0716)					
20240528	1	60457.82530378	10.6	31.0	40.1
20240528	2	60457.82625133	12.3	19.7	57.7
20240528	3	60457.82786567	9.0	17.1	29.8
20240627	1	60487.73142270	16.7	11.0	55.5
J0639+0828g (gpps0717)					
20240613	1	60474.27783075	47.5	7.6	117.8
20240613	2	60474.28532394	61.7	45.3	666.4
J2044+3843g (gpps0727)					
20240212	1	60352.23971594	18.4	4.4	54.2
20240917	1	60570.64981733	15.5	20.1	68.2
20240917	2	60570.65101100	9.7	44.2	36.0
20240917	3	60570.65166538	13.3	19.9	58.6
J1906+0310g (gpps0728)					
20201117	1	59170.34129234	14.4	5.3	42.4
20240927	1	60580.47441629	10.4	1.4	19.4
J1830−0231g (gpps0729)					
20230627	1	60121.72042370	35.6	12.8	201.1
20230627	2	60121.72461619	29.2	21.1	185.0
20240920	1	60573.48722729	48.2	16.9	354.8
J1843−0147g (gpps0731)					
20231102	1	60250.35810808	17.2	50.8	156.6
20241001	2	60584.45125998	19.8	92.2	213.4

3.3. Millisecond Pulsars Discovered by the GPPS Survey

We have discovered 177 millisecond pulsars in the FAST GPPS survey. In this new release of the major pulsar sample of

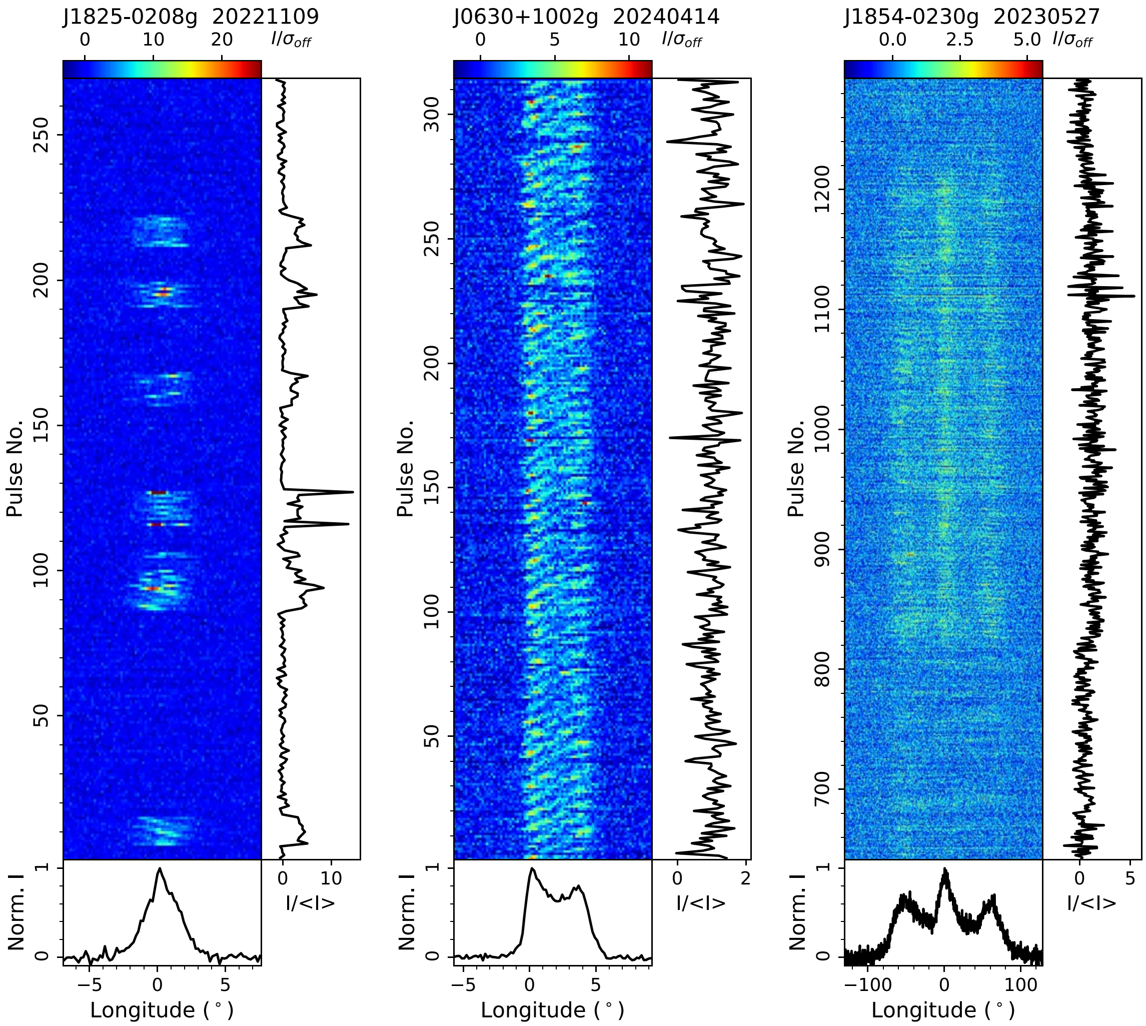

Figure 9. The pulse sequences of three example pulsars, PSRs J1825-0208g (gpps0483), J0630+1002g (gpps0649) and J1854-0230g (gpps0574) exhibiting nulling, subpulse drifting, or mode-changing behavior, respectively. The integrated profiles are plotted in the bottom subpanels, and variations of pulse energy along the pulse period are shown in the right subpanels.

the FAST GPPS survey, there are 133 new millisecond pulsars, see Table A1. Here we define the millisecond pulsars by a simple criterion of the spin period being less than 30 ms. As shown in Figure 7, the GPPS survey discovers weak pulsars, an order of magnitude weaker than previous surveys. For the millisecond pulsars, however, the GPPS survey detects them in a wide range of flux densities, which implies that many strong millisecond pulsars were missed in previous surveys probably due to their high DMs.

In general, bright short-period millisecond pulsars with sharp profiles can join Pulsar Timing Arrays (PTAs), which are the best probes for gravitational waves in a PTA because they can be observed with a high signal-to-noise ratio (S/N) and hence the time of arrival (TOA) can be measured with high accuracy. We measure the TOAs of the newly discovered millisecond pulsars using FAST 15 minute observations and find that 34 millisecond pulsars in Table 4 have a TOA accuracy better than 3 μs and they are suitable to be included in PTAs.

We here compare the pulse widths of normal pulsars and millisecond pulsars. Wang et al. (2023) measured the full widths at half maximum (FWHMs, W_{50}) of known pulsars and the GPPS pulsars detected in the FAST GPPS survey and other FAST projects. The measurements were made for profiles with the best S/N ever. We also measured the W_{50} of the newly discovered pulsars in the FAST GPPS survey, as listed in Table A1. As seen in Figure 8, the millisecond pulsars always have relatively wider profiles than normal pulsars. Normal pulsars often have FWHMs (W_{50}) of about a few percent of the period, a few larger than 10% of the periods, while millisecond pulsars often have width greater than 20°, many 50°. The

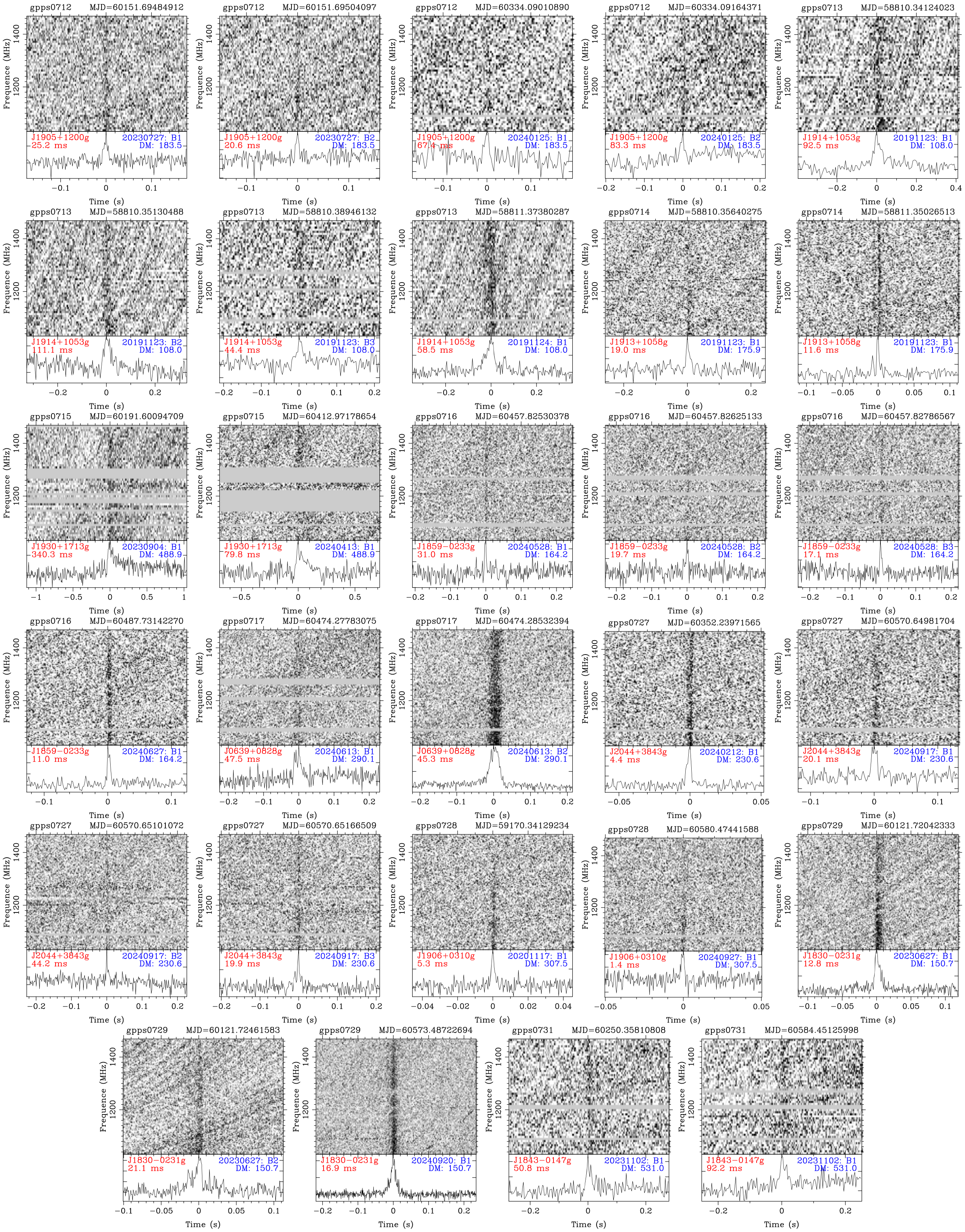

Figure 10. The waterfall plots in the frequency–time dimension for pulses of the Galactic radio transients detected by FAST. The lower subpanel is the integrated pulse profile over all frequency channels.

outstanding small-width dots are these pulsars with multiple components but one sharp tall component gives W_{50} so that they appear unusually narrow.

3.4. Binary Pulsars Discovered by the GPPS Survey

During the FAST GPPS survey, we have found about 160 binary pulsars (Han et al. 2021; Su et al. 2023; Wang et al. 2025). According to the indications for binaries, we extract the barycenter spin periods and accelerations by using the package PRESTO (Ransom 2001a) or PDMP in PSRCHIVE (Hotan et al. 2004), and do more follow-up observations. We plot the barycenter spin periods and accelerations in two dimensions (Freire et al. 2001) and find the orbital period and the projected semimajor axis directly by fitting these data by an ellipse. After more observations are made, the phase-connected timing solution can be found. We have derived the timing solutions for a quarter of binary pulsars discovered by the GPPS survey, see details in Wang et al. (2025).

A few interesting binaries are worth mentioning here. The first pulsar, PSR J1901+0658, discovered by the FAST GPPS survey is a double neutron star system with a total mass of 2.79 (7) $M_{\rm Sun}$ (Su et al. 2023). The millisecond pulsar PSR J1953+1844 was discovered by the GPPS survey (gpps0190) and has an orbital period of 53 minutes (Pan et al. 2023), which should be a descendant from ultracompact X-ray binaries (Yang et al. 2023). Careful timing of PSR J1928+1815 (gpps0121) revealed its compact orbit of 3.6 hr with a heavy companion eclipsing the pulsar signal for about 17% of the orbit (Yang et al. 2024). From timing observations, we find six millisecond pulsars having a massive white dwarf companion, and four of them have a detectable Shapiro delay (Yang et al. 2025), from which the mass of PSR J1943+2210 has been determined to be $1.84^{+0.11}_{-0.09}\ M_{\odot}$.

3.5. Newly Discovered Pulsars with Nulling, Mode-changing, and Subpulse Drifting Phenomena

Among the pulsars discovered by the FAST GPPS survey, some 58 bright pulsars show nulling, mode-changing, and subpulse drifting phenomena, as listed in Table 5. Three examples are shown in Figure 9.

Detailed analyses of these single pulse behaviors for the GPPS pulsars and also known pulsars have been carried out by Yi Yan et al. (2025, in preparation) using the FAST observation data.

3.6. Long Period Pulsars

Long-period pulsars with a period of, e.g., longer than 10 s have been difficult to discover because they have much fewer pulses in a given observation time, and hence do not appear clearly in the Fourier spectrum. The system variations over scales of a few seconds lead to large signal amplitude fluctuations which finally appear as red noise. The single pulse search approach we developed (Zhou et al. 2023a) can be efficiently used for the detection of long-period pulsars.

During the FAST GPPS survey, we detected eight pulsars with periods larger than 10 s: PSRs J2053+4455g (gpps0645,

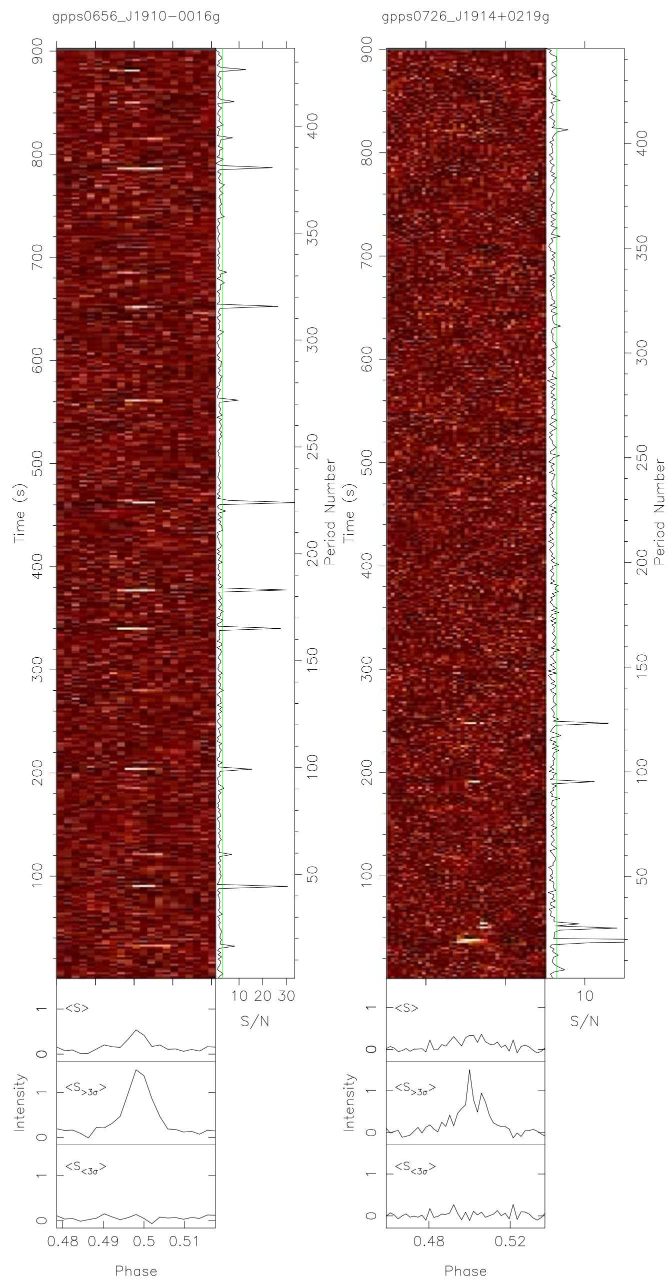

Figure 11. The pulse-stacks of two RRATs newly discovered in the GPPS survey, Plots for 20 newly discovered RRATs are presented in Figure A2 in the Appendix. The pulse-stack is shown in the main left panel, where only a few pulses occasionally emit. The right panel displays the curve of S/N over pulse number, with the sigma calculated from a given width of off-pulse phase range. Three subpanels below the main panel are the averaged profiles of all periods, and of single pulses with the S/N >3 and <3.

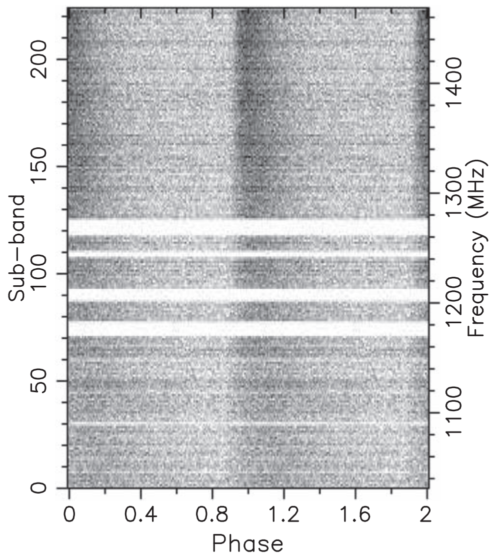

Figure 12. The waterfall plots in the frequency-phase dimension for a scattered pulsar PSR J1850−0050g (gpps0257, $P = 221$ ms, DM = 1072 pc cm^{-3}).

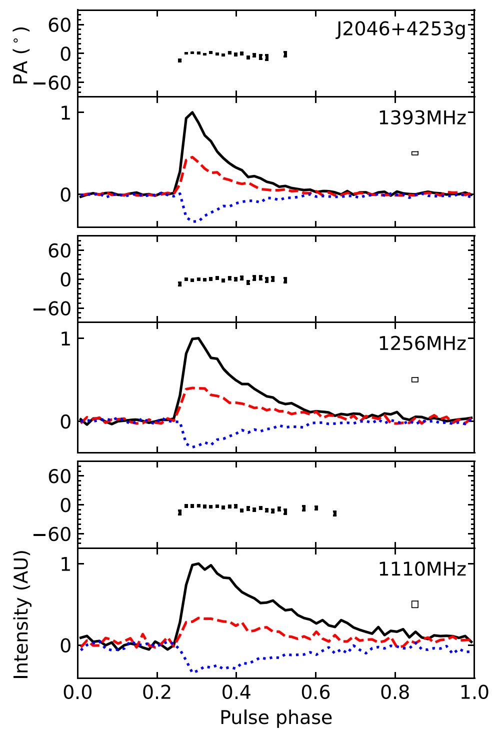

Figure 13. Polarization profiles of PSR J2046+4253g (gpps0464) at three subbands of FAST *L*-band observations. The lower subpanel shows the intensity profile in the solid line, linear polarization in the dashed line, and circular polarization in the dotted line. The linear polarization position angles (PAs) with error bars are displayed in the upper subpanel. The central frequency is marked in the lower subpanel, together with a box for the bin size and 1σ of profiles.

$P = 10.72$ s, DM = 440.6 pc cm^{-3}), J1940+2203 (gpps0312, $P = 11.91$ s, DM = 59.4 pc cm^{-3}), J1903+0433 (gpps0090, $P = 14.05$ s, DM = 200.6 pc cm^{-3}), J1902−0012g (gpps0488, $P = 14.31$ s, DM = 126.6 pc cm^{-3}), J2044+4331g (gpps0658, $P = 16.61$ s, DM = 483.2 pc cm^{-3}), J1911+0906g (gpps0285, $P = 16.93$ s, DM = 24.5 pc cm^{-3}), J1920+0941g (gpps0569, $P = 18.29$ s, DM = 54.2 pc cm^{-3}), J1847−0308g (gpps0730, $P = 29.77$ s, DM = 150.3 pc cm^{-3}). Most of them were detected first by the single pulse searching module. PSRs J1940+2203, J2044+4331g and J1911+0906g are RRATs, and only a few pulses have been detected.

Currently the longest period pulsar discovered in the FAST GPPS survey is PSR J1847−0308g, which is located in the smallest Galactic longitude ($l = 29\overset{\circ}{.}6312$, $b = -0\overset{\circ}{.}4558$) that FAST can survey (see Figure 1). Only four pulses were detected in the survey data obtained on 20210427. From the follow-up tracking observation for 15 minutes on 20240917, we detect many harmonics of this pulsar (3, 4, 6, 7, 10, 11, 13, 15, 16, 17). In reality, the longest period we detect in the period search is 9.923090 s, but its 1/3, 3/4, 3/7, and 3/11 harmonics directly tell the real period of 29.63 s.

Follow-up timing observations are the key to revealing their natures. Are they RRATs or normal pulsars and do they have ultra-strong magnetic fields? The timing result of PSR J1856+0211 (gpps0158, $P = 9.89$ s) has already shown that a long-period pulsar can be a normal pulsar near the death line (Su et al. 2023).

3.7. Newly Discovered RRATs

By using the specially designed single pulse searching module, we discovered and published 76 RRATs in Zhou et al. (2023b). For completeness, we include them in Table A1 with a superscript mark "s" after the names. We noticed that the period of PSR J1828−0003 (gpps0501) has been updated by Zhi et al. (2024) to a value of 3.8 s.

We have improved and updated the module after Zhou et al. (2023b), and processed the newly obtained survey data. We discovered 10 radio transients with only a few pulses detected, as listed in Table 6 and shown in Figure 10. Their DM values signify that they are Galactic RRATs though the periods cannot be derived from the detection of limited number of pulses. We measure the pulse width W_{50} in ms, and their fluence F_ν in units of mJy ms at the central frequency $\nu = 1.25$ GHz by integrating the previously defined flux density $S_{\rm i}$ over the sampling time $t_{\rm bin}$ (measured in ms). Mathematically, it can be expressed as $F_\nu = \sum S_{\rm i} \cdot t_{\rm bin}$. The results for fluence are listed in Table 6.

We have discovered 20 new conventional RRATs, and present the pulse-stacks and their mean profiles for all observed periods, radiated periods and not significantly radiated periods, as shown for two examples in Figure 11. The plots for all 20 RRATs are displayed in Figure A2 in the Appendix.

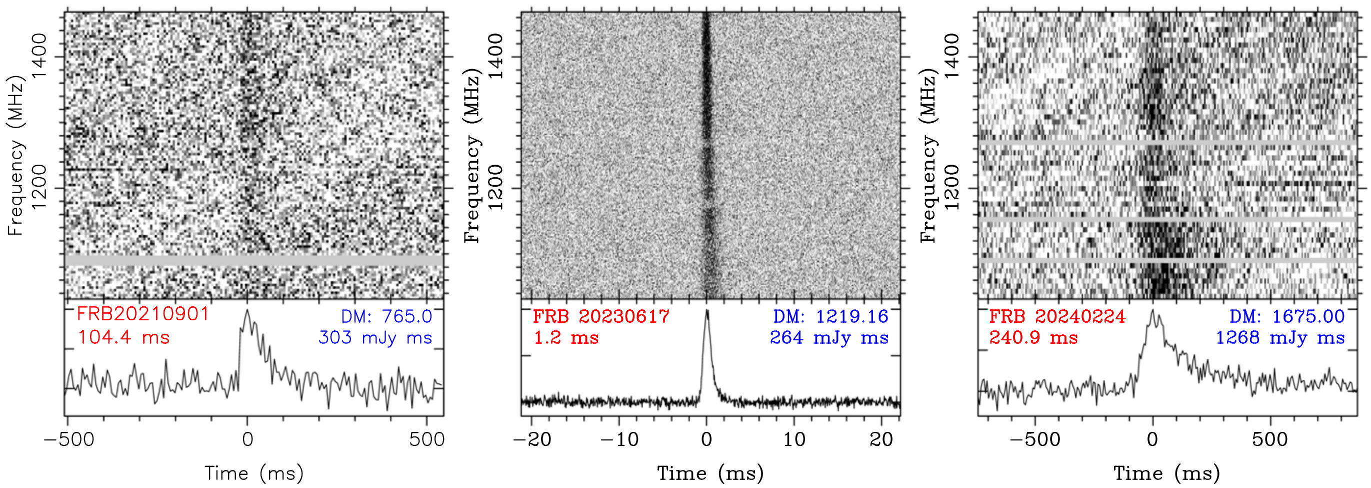

Figure 14. The dynamic spectra and profile for three new FRBs discovered in the FAST GPPS survey.

Table 7
Basic Parameters of the Newly Discovered Probable FRBs from the FAST GPPS Survey

Name	FRB 20210901 (J2045+4213)	FRB 20230617 (J1839+0203)	FRB 20240224 (J2102+4030)
R.A. (hh:mm:ss)	20:45:09.3	18:39:39.7	21:02:31.2
Decl. (± dd:mm:ss)	+42:13:03	+02:03:33	+43:30:23
Galactic: l (°)	82.2919	33.4241	85.3245
Galactic: b (°)	−0.4236	3.5584	−2.0334
DM (pc cm^{-3})	765 ± 17	1219.16 ± 0.78	1675 ± 12
DM_{MW} (pc cm^{-3})[a]	376/422	528/459	326/335
DM_{Ex} (pc cm^{-3})[a]	389/343	691/760	1349/1340
TOA (MJD)-59000	458.673323046	1111.742909304	1364.175237223
W_{50} (ms)	92.3	1.2	240.9
S_{peak} (mJy)	5.5	238.2	7.8
Fluence F_ν (mJy ms)	278.9	263.6	1268.3
τ_{1GHz} (ms)	187 ± 19	1.07 ± 0.04	217 ± 15

Note.
[a] Two values estimated by using the NE2001/YMW16 models.

3.8. Pulsars with Wide and Scattered Profiles

Looking at Figure A1, one may find that many pulsars have very wide profiles, for example, PSRs J1908+0705g (gpps0278), J1905−0048 (gpps0367), and J2007+3343g (gpps0604). Some profiles are not only wide but also have many components, such as 1835−0011g (gpps0221) and J1931+2333 (gpps0675). Such wide profiles, according to the pulsar emission geometry (Lyne & Manchester 1988), should be produced by viewing the radiation beam almost aligned to the rotation axis. Such a geometry can be verified by the polarization profiles.

Also impressive in Figure A1 are the scattered profiles of 64 GPPS pulsars, all of which have high DMs. We show the waterfall plot of the mean pulses in the frequency-phase dimension for two pulsars in Figure 12, which demonstrates that pulsar searches at lower frequencies are not good for detecting these distant high-DM and highly scattered pulsars (Xu et al. 2011) and that a survey at 2–3 GHz is probably the best. Another issue is the polarization angle curves of the scattered pulsars, which are always very flat as discussed and predicated by Li & Han (2003).

FAST has great sensitivity and can detect the different tails of the scattered pulsars in the subbands of the 1.0–1.5 GHz band, as affirmed in Figure 13. Conventionally, pulsar DM is determined by aligning the pulse peak, which is not good for the largely scattered profiles in subbands or channels. We developed a new method to determine DM, which is to align the front edge of subband profiles at the 1/4 level of the peak. See Jing et al. (2024) for the FAST pulsar database for the scattered profiles of the 64 newly discovered GPPS pulsars and 61 previously known pulsars and determined scattering parameters.

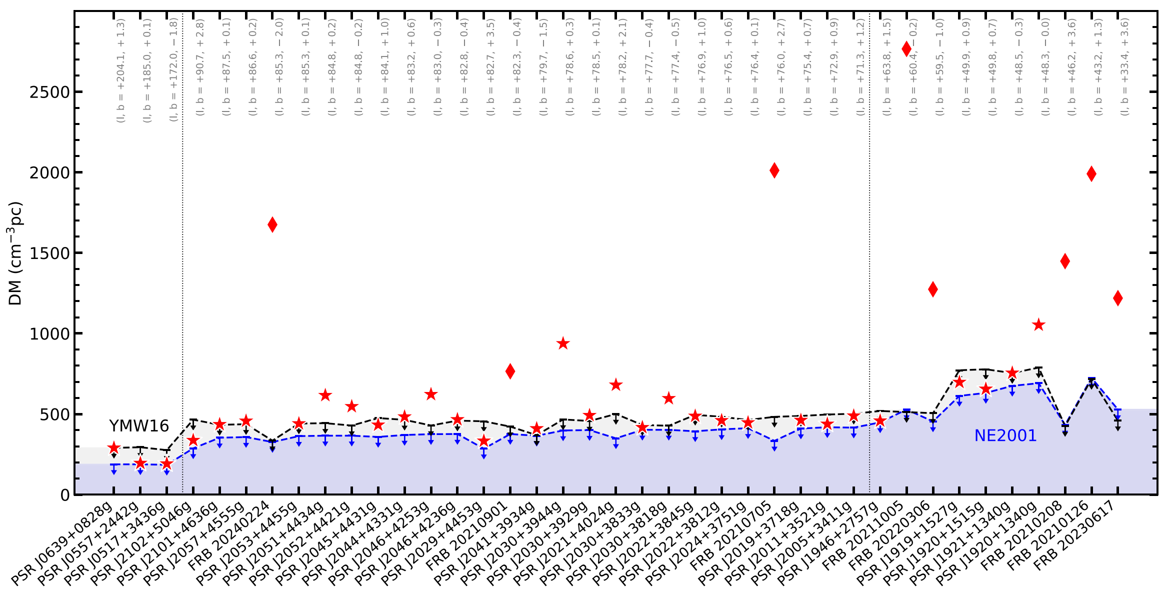

Figure 15. Pulsars (stars) and FRBs (diamonds) discovered by the FAST GPPS survey with DM excesses from the model predictions by NE2001 (Cordes & Lazio 2002) *or* YMW16 (Yao et al. 2017).

Table 8
Observation Sessions for the Two Newly Discovered FRBs and One Probable Case

Name	Date	MJD	$T_{\rm obs}$ (minute)	Burst No.
FRB 20210901	20210901	59458	5	1
	20211004	59491	15	0
	20220903	59825	40	0
	20230105	59949	40	0
	20230117	59961	40	0
	20230307	60010	25	0
	20230409	60043	40	0
	20230423	60057	40	0
	20230514	60078	40	0
	20240814	60536	50	0
FRB 20230617	20230617	59240	5	1
	20241110	60624	50	0
FRB 20230224	20230224	59240	5	1

3.9. Weakest Pulsars

Looking at Figure 6 and Table A1, we find that many pulsars we have discovered are among the weakest, i.e., very low flux densities. Note, however, that the flux density is the averaged value of the detected pulse energy over observation time. Therefore, RRATs and very nulling pulsars, as discussed above, deliver a few pulses over many minutes and are the weakest pulsars.

If talking about normal pulsars, not as extreme as RRATs, we find that a longer observation time is important for detecting weak pulsars. For example, PSR J1857+0249g (gpps0276) and PSR J1903+0830 (gpps0531) were first detected from another beam of these 15 minute tracking verification observations, not from the general 5 minute snapshot observations. Some weaker pulsars, such as PSR J1840-0245g (gpps0313), were first detected via the single pulse search module and then from a longer verification observation. PSR J1943+2205g (gpps0514) was discovered during the 1.5 hr tracking of a binary pulsar.

There is no doubt that there are *more* weak pulsars in the Milky Way than we have detected, so a longer integration time is needed to uncover them for a given telescope.

3.10. Two FRBs with One Probable Case

FRBs are generally detected as dispersed radio pulses (Lorimer et al. 2007), and they appear not much different from single pulses of pulsars (Zhou et al. 2022). Some FRBs are repeating, and most detected FRBs are one-off events (Cordes & Chatterjee 2019; Pleunis et al. 2021). There have been 10 FRBs discovered by FAST (Zhu et al. 2020; Niu et al. 2021, 2022; Zhou et al. 2023a), and five of them from the FAST GPPS survey data at low Galactic latitudes (Zhou et al. 2023a).

Processing newly observed FAST GPPS survey data by using the single pulse-searching module (Zhou et al. 2023a), we have found three new one-off pulses with DMs much larger than the prediction of maximum DMs by the Galactic electron density distribution models (Cordes & Lazio 2002; Yao et al. 2017). Two of them are located at a slightly high Galactic latitude, with large excess of DM, and hence are extragalactic FRBs, and we name them FRB 20230617, and FRB 20240224. One probable case is named FRB 20210901. Their waterfall plots in the frequency–time dimensions are presented in Figure 14, and their physical parameters are given in Table 7.

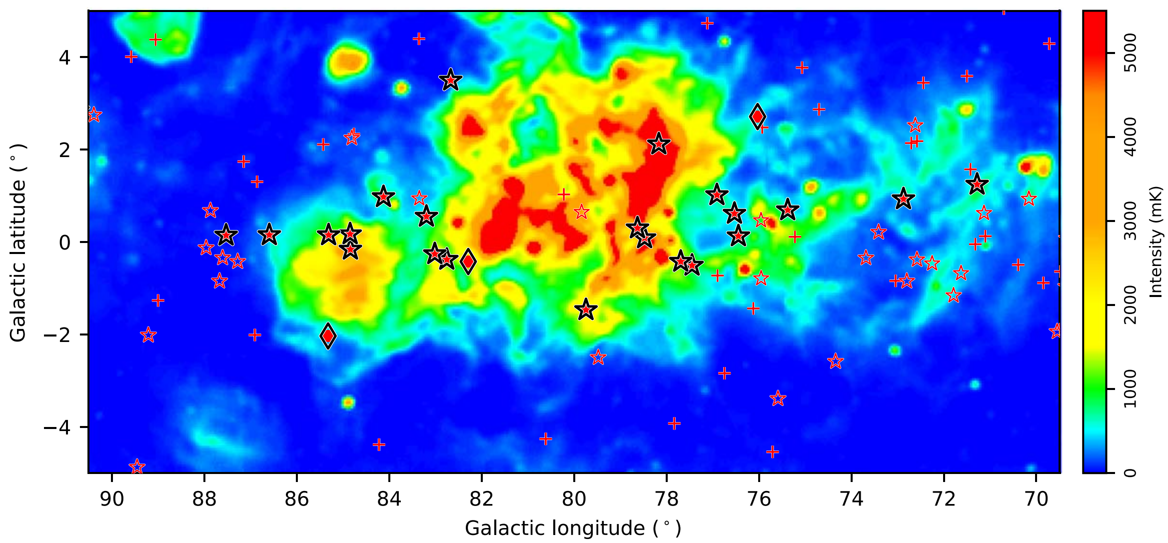

Figure 16. The radio continuum maps of the Galactic plane at the 6 cm wavelength from Gao et al. (2011) around the Local Arm with newly discovered FRBs (in diamonds) and pulsars (in stars). Previously known pulsars are plotted as "+." Filled symbols with a black frame stand for those with excessive DMs from the model predictions by NE2001 (Cordes & Lazio 2002) and YMW16 (Yao et al. 2017).

FRB 20210901 has a DM of 765 pc cm^{-3} located at about the direction of the Galactic coordinates of (gl, gb) = (82$^\circ_.$3, $-0^\circ_.4$), where the predicated DM from the medium in our Galaxy is 376 or 422 pc cm^{-3} according to the Galactic electron density distribution models NE2001 (Cordes & Lazio 2002) or YMW16 (Yao et al. 2017). In general, any pulses with a DM of 765 pc cm^{-3}, with an excess DM of 389 or 343 pc cm^{-3}, should be of extragalactic origin. However, it is located near the Galactic plane where the Local Arm is laid. We have discovered pulsars in the nearby directions with excessive DMs (Han et al. 2021), see also Figure 15, for example PSR J2046+4236g (gpps0625, GL = 82$^\circ_.$7557, GB = 0$^\circ_.$3808) with a DM of about 466 pc cm^{-3} and PSR J2046+4253g (gpps0464, GL = 83$^\circ_.$0161, GB = $-0^\circ_.2593$) with a DM of 622 pc cm^{-3}. Therefore, we are not confident in claiming this burst is of extragalactic origin. Nevertheless, given the non-detection in so many hours of follow-up observations as listed in Table 8, we believe it is probably an FRB.

We noticed that all three FRBs show the scattering effect, i.e., the more extended tails at lower frequencies (see Figure 14). The scattering parameters are listed in Table 7. We concurrently fit for the scattering times τ of different subbands utilizing the relationship $\tau_\nu = \tau_{1\mathrm{GHz}}\nu^{-4}$ (Nice et al. 2013). The scattering times at 1 GHz are listed in Table 7.

3.11. Pulsars with Excessive DMs from the Models

One can see that in Figure 15 there are a number of pulsars that have DM values exceeding the model predictions by NE2001 (Cordes & Lazio 2002) or YMW16 (Yao et al. 2017). Those pulsars are inside the Milky Way, and most of them have slightly larger DM than the maximum DMs given by NE2001 but smaller than those given by YMW16. Two pulsars, PSRs J2046+4253g and J1920+1340g, have DMs of 622 and 1053 pc cm^{-3} respectively, much larger than the model values caused by the unpredicted clouds in the spiral arms. PSR J1920+1340 is at the Galactic coordinates of (l, b) = (48$^\circ_.$3345, $-0^\circ_.0051$), probably behind the Sagittarius Arm and the Perseus arm. PSR J2046+4253g at (l, b) = (83$^\circ_.$0161, $-0^\circ_.2593$), as several pulsars in Han et al. (2021) are behind the Local Arm and have excessive DM due to uncounted clouds (see Figure 16).

4. Summary and Perspectives

The super-sensitive FAST, mounted with the *L*-band 19-beam receiver, is currently the most powerful tool to discover pulsars. We have conducted the FAST-GPPS survey for about 5 yr and finished observations of 4359 covers among the planned 18,413 covers. In total, we have found 751 pulsars, including 157 binary pulsars and 107 RRATs. In addition to previous publications by Han et al. (2021) and Zhou et al. (2023b), in this paper, we present data on 473 new pulsars, including 137 MPSs and 30 new RRATs. In addition to five FRB published by Zhou et al. (2023a), we here publish two FRBs with one probable case, whose DM values exceed the upper limits given by the Galactic electron density distribution models (Cordes 2004; Yao et al. 2017).

Most pulsars we have discovered are fairly weak, including many weakest ones, with a flux density down to the μJy level. During some verification observations with longer integration time, some sub-μJy pulsars have also been discovered. With the help of the estimated distances from the Galactic electron density distribution models (Cordes 2004; Yao et al. 2017), we found that our newly discovered pulsars make a decisive contribution to the lower end of the luminosity distribution of pulsars.

Our survey detects 177 millisecond pulsars, nearly 20% of the total number, which is a much higher fraction of millisecond pulsars in the Galactic fields, partially because of the improved sensitivity and partially due to the lack of millisecond pulsars with high flux densities.

Because of using the independent single pulse searching module, we found eight long-period pulsars with a period greater than 10 s, and also 100 RRATs. These new pulsars are hard to detect during normal periodical signal searches. The results suggest that there are many more slow neutron stars missing in previous surveys. There are many RRATs in our Milky Way, about 15%, which occasionally emit strong pulses and are missed also in previous surveys.

With polarization measurements of these newly discovered pulsars, including RRATs, one can get their RMs. Together with DMs, the details of the Galactic magnetic fields can be better revealed, as shown by Xu et al. (2022).

In the sky region where the FAST-GPPS survey or verification observations have been observed, there are 1288 known pulsars. We detected most of them, but some have not been detected due to various reasons. The parameters of 46 previously known pulsars have been improved based on the FAST observations.

In the future, we have to finish the planned FAST-GPPS survey. We understand that the pulsar discovery rate, i.e., the number of new pulsars discovered per 100 observation hours, becomes smaller when the observation pointings go away from the Galactic plane. The survey results should be fundamental to outlining the distribution of generated neutron stars along the Galactocentric radius.

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Authors Contributions

The FAST GPPS survey is a key FAST science project led by J. L. Han. He organized the teamwork for the survey and follow-up observations, processed the survey data, and discovered these pulsars, supervised all the work; D. J. Zhou developed the single pulse searching module, and processed all GPPS survey data, and found RRATs and FRBs; he also updated the core of searching software to speed up calculations; W. Q. Su patiently processed prepared pulsar profiles from FAST observation data, and prepared the big pulsar table published in this paper; C. Wang initialized the FAST snapshot observations, fed all targets for the FAST GPPS observations, and worked the whole survey plane; Y. Yan worked on known pulsars and updated their parameters; P. F. Wang initialized the pulsar search package and polarization calibration procedures; T. Wang worked on the data preparation procedures for pulsar searching; W. C. Jing jointly verified many new GPPS pulsars, prepared the web page, and also made plots of the parameter distribution published in this paper; P. F. Wang and Jun Xu made fundamental contributions to the construction and maintenance of the computer clusters for pulsar searching; Z. L. Yang jointly verified many newly discovered GPPS pulsars; J. H. Sun and Q. L. Yang realized the snapshotZ observation mode together with Chen Wang with the design given by J. L. Han; Other people jointly proposed or contributed to the FAST key project. All authors contributed to the finalization of this paper.

Data Availability

Original FAST observational data will be provided as open resources according to the FAST data 1 yr protection policy. The folded and calibrated pulsar profiles presented in this paper can be found on the web page: http://zmtt.bao.ac.cn/GPPS/.

Appendix
Data and Profiles of Newly Discovered Pulsars

We discovered 473 pulsars, in addition to 201 pulsars and one RRAT in Han et al. (2021) and 76 RRATs in Zhou et al. (2023b). For completeness, we here list all objects from gpps0202 in Table A1, with the references for objects studied in other papers.

We present in Figure A1 the mean profiles of pulsars, except for the RRATs. The stacking pulses of 20 RRATs are presented in Figure A2.

Table A1
A List of Pulsars Discovered by the GPPS Survey

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1853−0009g	gpps0202	0.72110	443.1	18:53:36.2	−00:09	33.0354	−0.5556	12.7	7.2	5.5	7.0	
J1906+0352g	gpps0203	0.28560	372.0	19:06:27.2	+03:52	38.0986	−1.5628	33.7	7.9	11.2	8.3	
J1837+0528g	gpps0204	0.00626	120.8	18:37:40.5	+05:28	36.2535	+5.5477	18.9	3.8	5.9	17.9	
J1840+0151g	gpps0205	1.75041	73.6	18:40:58.6	+01:51	33.3997	+3.1769	20.6	2.5	2.7	5.2	
J1854+0358g	gpps0206	0.59084	486.5	18:54:04.0	+03:58	36.7715	+1.2287	18.7	9.2	11.9	5.9	
J1858−0055g	gpps0207	2.84662	270.7	18:58:05.8	−00:55	32.8614	−1.9064	16.5	6.3	5.6	7.0	
J1939+2452g	gpps0208	2.40253	240.5	19:39:09.8	+24:52	60.3194	+1.4247	7.7	8.1	8.6	3.2	
J1933+2037g	gpps0209	0.79886	100.0	19:33:01.7	+20:37	55.9258	+0.5929	23.6	4.2	3.3	11.6	
J1951+2528g	gpps0210	0.00231	205.1	19:51:27.0	+25:28	62.2360	−0.6780	286.8	7.3	7.9	63.8	
J1927+1457g	gpps0211	0.91963	211.8	19:27:06.8	+14:57	50.2759	−0.8925	11.0	6.7	5.5	6.2	
J1953+3303g	gpps0212	0.71289	290.7	19:53:09.3	+33:03	68.9375	+2.8809	21.6	11.2	11.3	6.9	
J1954+2833g	gpps0213	0.02721	37.0	19:54:11.3	+28:33	65.1956	+0.3812	123.5	2.9	2.4	12.3	
J1921+1329g	gpps0214	0.40842	573.5	19:21:26.3	+13:29	48.3261	−0.3790	11.8	14.4	11.9	19.9	
J1919+1341g	gpps0215	0.01166	394.5	19:19:23.0	+13:41	48.2513	+0.1680	153.9	9.9	8.7	45.1	(J)
J1933+1454g	gpps0216	1.34613	204.8	19:33:35.3	+14:54	50.9850	−2.2875	17.4	6.8	5.5	3.4	
J1839+0221g	gpps0217	0.27277	117.3	18:39:18.3	+02:21	33.6438	+3.7704	46.1	3.5	4.3	6.4	
J1828+0020g	gpps0218	0.00294	40.4	18:28:21.6	+00:20	30.6114	+5.2954	9.5	1.6	1.3	195.0	
J1917+1710g	gpps0219	0.41934	41.6	19:17:37.8	+17:10	51.1564	+2.1606	32.3	2.6	1.7	14.7	
J1908+0457g	gpps0220	0.97647	356.7	19:08:30.4	+04:57	39.2861	−1.5248	30.0	7.8	11.4	1.9	
J1835−0011g	gpps0221	0.00323	36.2	18:35:46.0	−00:11	30.9675	+3.3961	205.5	1.5	1.2	197.2	
J1913+0458g	gpps0222	0.44479	103.8	19:13:37.9	+04:58	39.8936	−2.6478	17.8	3.7	4.1	7.3	
J1848+1245g	gpps0223	0.24823	100.0	18:48:07.3	+12:45	43.9652	+6.5043	335.4	3.8	5.3	7.8	
J1845+0104g	gpps0224	0.00671	94.9	18:45:50.4	+01:04	33.2530	+1.7367	102.6	2.9	3.1	106.2	
J1945+2410g	gpps0225	2.37759	478.4	19:45:16.0	+24:10	60.4016	−0.1271	41.9	14.9	16.2	5.6	
J1906+0335g	gpps0226	1.29639	213.0	19:06:48.8	+03:35	37.8755	−1.7792	8.0	5.3	6.0	2.8	(2)
J1943+2210g	gpps0227	0.01287	110.7	19:43:53.7	+22:10	58.5182	−0.8487	513.6	4.6	4.0	6.6	
J1946+2757g	gpps0228	0.74303	458.0	19:46:44.0	+27:57	63.8469	+1.4908	92.9	50.0	15.3	44.7	(J)
J1905+0649g	gpps0229	0.02747	187.7	19:05:05.2	+06:49	40.5808	+0.0796	163.5	4.9	4.4	21.1	
J1920+0129g	gpps0230	0.00358	104.1	19:20:39.9	+01:29	37.6166	−5.8097	449.9	3.5	4.9	16.9	
J1847+0148g	gpps0231	0.60246	314.7	18:47:09.5	+01:48	34.0601	+1.7794	21.9	7.0	6.5	22.9	
J2036+3506g	gpps0232	1.37092	108.4	20:36:11.6	+35:06	75.5900	−3.3891	13.2	4.9	5.4	12.5	
J1931+1841g	gpps0233	2.59411	268.8	19:31:12.7	+18:41	54.0179	+0.0307	48.6	8.2	5.4	4.9	
J1921+0851g	gpps0234	0.95671	101.0	19:21:11.3	+08:51	44.2102	−2.4994	72.9	4.2	4.8	3.2	(2)
J1911+1206g	gpps0235	0.00344	181.7	19:11:24.5	+12:06	45.9711	+1.1440	172.1	5.5	6.3	40.3	
J1857+0642g	gpps0236	0.00353	21.6	18:57:58.6	+06:42	39.6395	+1.6144	1009.4	1.6	1.0	44.6	
J1921+1216g	gpps0237	0.00300	256.1	19:21:03.3	+12:16	47.2142	−0.8655	600.1	7.2	6.8	44.3	(J)
J1846+0153g	gpps0238	2.05252	322.7	18:46:34.3	+01:53	34.0687	+1.9485	11.2	7.3	6.9	3.1	
J1929+2355g	gpps0239	0.00479	206.8	19:29:44.8	+23:55	58.4448	+2.8383	310.8	7.6	8.9	30.9	
J1937+1358g	gpps0240	2.64537	174.8	19:37:26.4	+13:58	50.6178	−3.5567	132.1	6.2	5.7	27.9	
J1904+0553Bg	gpps0241	0.57454	140.9	19:04:17.6	+05:53	39.6422	−0.1600	4.9	4.2	3.7	6.2	
J1946+0904g	gpps0242	0.02577	37.2	19:46:56.8	+09:04	47.4641	−7.9780	647.2	2.2	1.6	29.6	
J1953+1006g	gpps0243	0.00259	57.2	19:53:33.9	+10:06	49.1723	−8.8962	91.5	2.8	2.5	18.0	
J1948+1801g	gpps0244	0.53624	265.1	19:48:39.9	+18:01	55.4851	−3.8973	12.5	9.9	12.9	14.3	
J1838+1507g	gpps0245	0.00382	54.8	18:38:36.6	+15:07	45.0882	+9.6166	362.1	2.6	2.4	58.9	
J1851+0347g	gpps0246	2.14145	439.6	18:51:57.2	+03:47	36.3591	+1.6099	10.0	9.1	12.0	4.9	
J1912+0735g	gpps0247	3.68507	160.4	19:12:41.2	+07:35	42.1068	−1.2286	31.9	4.8	4.9	10.4	

Table A1
(Continued)

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1937+1941g	gpps0248	0.16676	333.8	19:37:16.2	+19:41	55.5835	−0.7367	49.5	9.7	8.8	26.6	
J1935+1836g	gpps0249	0.39850	230.3	19:35:02.9	+18:36	54.3849	−0.8048	13.3	7.3	5.0	13.3	
J1809−0116g	gpps0250	1.88738	128.5	18:09:43.1	−01:16	26.9905	+8.6810	59.7	3.9	9.1	3.2	
J2015+3423g	gpps0251	0.78465	219.1	20:15:46.9	+34:23	72.5819	−0.3813	17.0	7.1	6.6	14.7	
J1843−0157g	gpps0252	0.50886	751.0	18:43:36.3	−01:57	30.2935	+0.8474	209.0	10.3	10.7	28.1	(J)
J1835−0113g	gpps0253	0.59963	316.7	18:35:08.4	−01:13	29.9865	+3.0685	54.8	7.1	11.9	8.1	
J1952+2818g	gpps0254	0.00309	250.2	19:52:36.7	+28:18	64.8041	+0.5506	22.4	8.0	8.1	72.8	
J1929+1504g	gpps0255	0.23278	91.9	19:29:14.4	+15:04	50.6170	−1.2917	11.2	4.0	2.8	8.7	
J2024+3751g	gpps0256	0.21164	446.6	20:24:32.9	+37:51	76.4462	+0.1272	11.6	50.0	15.4	13.1	
J1850−0050g	gpps0257	0.22152	1060.0	18:50:27.3	−00:50	32.0765	−0.1622	93.8	12.9	7.0	90.9	(J)
J1851+1021g	gpps0258	0.86786	191.2	18:51:34.6	+10:21	42.1870	+4.6724	52.5	6.5	13.3	6.0	
J1904+0945g	gpps0259	1.56779	326.6	19:04:20.6	+09:45	43.0757	+1.5973	21.4	8.1	11.3	4.7	
J1903+0949g	gpps0260	0.32544	107.9	19:03:41.7	+09:49	43.0697	+1.7739	22.8	3.9	3.9	3.9	
J1917+0923g	gpps0261	0.00471	297.8	19:17:45.4	+09:23	44.2885	−1.4995	571.0	7.7	9.9	151.5	
J1928+1458g	gpps0262	0.00297	86.2	19:28:42.8	+14:58	50.4737	−1.2249	89.2	3.8	2.7	17.7	
J1918+1521g	gpps0263	0.00407	237.0	19:18:13.6	+15:21	49.6155	+1.1861	31.0	7.3	6.1	37.3	
J1954+2732g	gpps0264	0.73775	228.5	19:54:32.8	+27:32	64.3640	−0.2119	19.8	7.7	7.9	2.0	
J1826−0132g	gpps0265	0.36325	103.8	18:26:05.1	−01:32	28.6536	+4.9288	60.7	2.9	3.9	2.8	
J1854−0156g	gpps0266	0.60079	280.6	18:54:22.0	−01:56	31.5372	−1.5366	48.1	6.1	5.3	16.3	
J1838−0156g	gpps0267	0.00551	163.4	18:38:06.8	−01:56	29.6819	+2.0759	23.7	4.0	4.2	19.0	
J1916+1428g	gpps0268	1.12331	104.6	19:16:45.4	+14:28	48.6691	+1.0883	24.3	4.2	3.3	4.8	
J1921+1503g	gpps0269	5.63771	479.9	19:21:27.5	+15:03	49.7148	+0.3557	11.7	12.4	10.2	4.7	
J1925+1335g	gpps0270	0.39864	94.2	19:25:44.1	+13:35	48.9170	−1.2471	21.7	4.0	2.9	4.8	
J2003+3032g	gpps0271	0.00179	164.4	20:03:53.8	+30:32	67.9838	−0.3813	102.7	6.3	6.8	34.4	
J1853−0049g	gpps0272	0.01678	405.4	18:53:02.9	−00:49	32.3886	−0.7307	54.3	7.0	5.5	57.0	(J)
J1851−0108g	gpps0273	0.08708	669.6	18:51:10.6	−01:08	31.8853	−0.4628	396.1	8.8	6.1	36.2	(J)
J1930+1708g	gpps0274	0.00228	87.2	19:30:17.8	+17:08	52.5511	−0.5249	939.5	3.8	2.8	30.1	
J1905+0849g	gpps0275	1.03433	257.8	19:05:02.6	+08:49	42.3270	+1.0167	3.7	6.3	7.7	4.2	(1)
J1857+0249g	gpps0276	1.54988	604.0	18:57:48.9	+02:49	36.1721	−0.1297	8.8	8.9	6.2	19.1	
J1845−0118g	gpps0277	1.71873	573.5	18:45:08.5	−01:18	31.0516	+0.8049	24.9	8.4	7.6	11.8	
J1908+0704g	gpps0278	0.00199	41.4	19:08:55.4	+07:04	41.2233	−0.6365	409.8	2.4	1.4	58.3	
J1856+0805g	gpps0279	0.27617	308.8	18:56:09.7	+08:05	40.6681	+2.6347	8.2	8.5	14.9	5.5	
J1850−0004g	gpps0280	⋯	154.0	18:50:05.0	−00:04	32.7108	+0.2672	⋯	4.4	3.6	⋯	(2)
J1853+0353g	gpps0281	⋯	379.0	18:53:29.1	+03:53	36.6324	+1.3205	⋯	7.7	9.2	⋯	(2)
J1847−0046g	gpps0282	⋯	337.0	18:47:46.7	−00:46	31.8226	+0.4595	⋯	6.2	4.9	⋯	(2)
J1855+0033g	gpps0283	⋯	554.0	18:55:03.3	+00:33	33.8400	−0.5507	⋯	8.3	6.1	⋯	(2)
J1856+0528g	gpps0284	⋯	307.0	18:56:23.0	+05:28	38.3632	+1.3951	⋯	6.6	9.0	⋯	(2)
J1911+0906g[a]	gpps0285	16.9259	24.3	19:11:38.1	+09:06	43.3298	−0.2966	26.0	1.7	1.1	4.2	
J1916+0937g	gpps0286	7.36818	186.0	19:16:00.9	+09:37	44.2837	−1.0167	0.13	5.4	5.5	3.5	(2)
J1916+1142Ag	gpps0287	⋯	260.0	19:16:58.9	+11:42	46.2404	−0.2542	⋯	6.8	6.1	⋯	(2)
J1921+1629g	gpps0288	1.86010	105.0	19:21:47.0	+16:29	51.0171	+0.9620	2.6	4.3	3.2	3.7	(2)
J1924+1734g	gpps0289	⋯	49.0	19:24:57.4	+17:34	52.3305	+0.8049	⋯	2.9	2.0	⋯	(2)
J1927+1940g	gpps0290	⋯	347.0	19:27:17.2	+19:40	54.4339	+1.3133	⋯	10.2	9.0	⋯	(2)
J1933+2401g	gpps0291	⋯	185.0	19:33:35.5	+24:01	58.9587	+2.1181	⋯	6.8	8.1	⋯	(2)
J1934+2341g	gpps0292	⋯	252.0	19:34:02.8	+23:41	58.7140	+1.8639	⋯	8.5	9.0	⋯	(2)
J2001+4209g	gpps0293	⋯	153.0	20:01:39.2	+42:09	77.6208	+6.1426	⋯	7.2	9.3	⋯	(2)

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J2005+3154g	gpps0294	0.74984	225.0	20:05:19.0	+31:54	69.2982	+0.0912	0.17	7.3	7.1	11.3	(2)
J2030+3833g	gpps0295	⋯	417.0	20:30:31.6	+38:33	77.6938	−0.4236	⋯	50.0	15.2	⋯	(2)
J1857+0229g	gpps0296	0.58420	574.0	18:57:18.9	+02:29	35.8211	−0.1695	0.62	8.5	6.1	6.3	(2)
J1858+0453g	gpps0297	3.76136	429.0	18:58:48.2	+04:53	38.1201	+0.5930	0.92	7.5	6.9	4.9	(2)
J1859+0251g	gpps0298	3.58010	286.0	18:59:35.7	+02:51	36.4081	−0.5084	3.2	6.1	4.9	7.7	(2)
J1904+0621g	gpps0299	1.23231	173.0	19:04:55.0	+06:21	40.1257	−0.0847	1.8	4.7	4.1	3.9	(2)
J1905+0156g	gpps0300	1.08517	137.0	19:05:07.9	+01:56	36.2287	−2.1556	1.6	2.8	4.5	3.5	(2)
J1905+0558g	gpps0301	0.84592	472.0	19:05:04.2	+05:58	39.8037	−0.2940	1.2	8.1	6.5	3.5	(2)
J1911+1017g	gpps0302	1.33655	162.0	19:11:13.8	+10:17	44.3325	+0.3389	0.78	4.3	4.4	17.6	(2)
J1916+1142Bg	gpps0303	1.18795	318.0	19:16:58.9	+11:42	46.2404	−0.2542	1.0	7.8	7.0	8.4	(2)
J1917+0834g	gpps0304	2.93261	101.0	19:17:04.5	+08:34	43.4765	−1.7368	0.15	3.8	3.5	4.6	(2)
J1924+1446g	gpps0305	1.08996	336.0	19:24:53.8	+14:46	49.8601	−0.5084	0.063	9.3	7.0	3.5	(2)
J1935+1841g	gpps0306	5.52839	290.0	19:35:02.6	+18:41	54.4583	−0.7625	0.45	8.8	6.1	1.7	(2)
J2005+3156g	gpps0307	2.14558	337.0	20:05:30.0	+31:56	69.3472	+0.0762	1.0	10.7	10.7	2.5	(2)
J1842+0114g	gpps0308	4.14037	307.0	18:42:13.0	+01:14	32.9790	+2.6139	8.9	6.9	7.9	5.5	(2)
J1845−0008g	gpps0309	1.26759	143.0	18:45:08.0	−00:08	32.0945	+1.3419	9.6	3.6	3.9	4.9	(2)
J1855+0240g	gpps0310	1.22386	397.0	18:55:13.1	+02:40	35.7477	+0.3812	1.3	7.1	5.6	4.9	(2)
J1921+1632g	gpps0311	0.49267	164.0	19:21:36.9	+16:32	51.0342	+1.0167	0.26	5.6	4.5	15.5	(2)
J1940+2203g	gpps0312	11.90621	59.0	19:40:49.6	+22:03	58.0537	−0.2966	1.5	3.3	2.7	1.1	(2)
J1840−0245g	gpps0313	1.50245	277.0	18:40:14.0	−02:45	29.1928	+1.2285	6.7	5.7	5.0	14.1	(2)
J1843−0051g	gpps0314	0.57958	573.0	18:43:32.0	−00:51	31.2740	+1.3708	6.0	10.0	10.3	4.2	(2)
J1851+0051g	gpps0315	4.02738	575.0	18:51:39.9	+00:51	33.7177	+0.3389	2.7	8.2	6.1	2.8	(2)
J1853−0130g	gpps0316	1.94518	344.0	18:53:07.1	−01:30	31.7855	−1.0591	6.4	6.6	5.6	2.6	(2)
J1856+0029g	gpps0317	0.37566	234.0	18:56:49.8	+00:29	33.9868	−0.9743	2.6	5.7	4.7	11.3	(2)
J1900+0732g	gpps0318	1.70940	226.0	19:00:15.0	+07:32	40.6394	+1.4827	4.0	5.7	8.2	2.1	(2)
J1903+0319g	gpps0319	1.85372	307.0	19:03:13.9	+03:19	37.2397	−1.1014	5.1	6.5	6.5	5.6	(2)
J1907+0555g	gpps0320	3.15929	150.0	19:07:27.6	+05:55	40.0279	−0.8473	7.2	4.4	4.1	2.6	(2)
J1912+1000g	gpps0321	3.05280	147.0	19:12:46.3	+10:00	44.2592	−0.1271	3.7	3.2	4.1	2.1	(2)
J1919+1113g	gpps0322	0.76593	288.0	19:19:27.1	+11:13	46.0935	−1.0167	4.8	7.6	7.5	4.2	(2)
J1921+1227g	gpps0323	1.59764	259.0	19:21:22.4	+12:27	47.4143	−0.8472	0.27	7.3	6.8	2.8	(2)
J1940+2231g	gpps0324	5.68230	198.0	19:40:55.1	+22:31	58.4695	−0.0847	2.9	6.8	7.6	3.3	(2)
J1926+1803g	gpps0325	1.03465	315.5	19:26:38.8	+18:03	52.9418	+0.6779	15.1	9.2	6.1	1.6	
J1837−0048g	gpps0326	0.00273	195.5	18:37:35.9	−00:48	30.6358	+2.7110	331.0	4.7	5.0	40.0	
J1908+0233g	gpps0327	0.96916	237.8	19:08:42.5	+02:33	37.1741	−2.6738	25.9	6.2	8.5	9.0	
J1955+2857g	gpps0328	0.18889	197.2	19:55:52.7	+28:57	65.7221	+0.2665	16.7	7.0	7.4	17.7	
J1844−0142g	gpps0329	0.34872	794.5	18:44:05.2	−01:42	30.5748	+0.8566	54.6	11.0	12.4	12.0	(J)
J1833−0204g	gpps0330	0.00443	312.1	18:33:26.3	−02:04	29.0217	+3.0500	26.6	6.9	11.9	53.6	(J)
J1856+1000g	gpps0331	0.00487	202.1	18:56:30.3	+10:00	42.4213	+3.4315	1708.8	6.4	11.3	99.4	
J1844−0136g	gpps0332	0.41724	901.0	18:44:20.2	−01:36	30.6847	+0.8427	59.6	13.0	14.9	21.7	(J)
J1845−0103g	gpps0333	0.09906	750.1	18:45:31.1	−01:03	31.3096	+0.8311	350.0	10.5	10.8	61.4	(J)
J1848−0044g	gpps0334	0.00555	227.7	18:48:51.6	−00:44	31.9785	+0.2356	305.6	5.4	4.1	104.4	
J1902+0953g	gpps0335	0.67733	295.3	19:02:15.2	+09:53	42.9629	+2.1183	8.5	8.0	12.1	5.6	
J1921+1652g	gpps0336	0.00368	124.1	19:21:34.0	+16:52	51.3275	+1.1863	744.1	4.7	3.6	84.6	
J1847−0048g	gpps0337	0.58247	667.0	18:47:47.2	−00:48	31.8020	+0.4466	286.4	8.7	6.4	23.7	
J1847−0052g	gpps0338	0.33253	626.5	18:47:11.6	−00:52	31.6708	+0.5460	112.0	8.5	6.5	33.8	
J1852−0111g	gpps0339	1.90210	457.1	18:52:24.9	−01:11	31.9757	−0.7643	43.1	7.4	5.8	4.1	

Table A1
(Continued)

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1840−0049g	gpps0340	0.00676	245.9	18:40:02.9	−00:49	30.9048	+2.1606	61.5	5.7	5.4	167.5	
J1841−0053g	gpps0341	1.43289	439.5	18:41:26.0	−00:53	31.0027	+1.8217	35.3	8.8	8.7	2.5	
J1849+0304g	gpps0342	0.00179	146.7	18:49:32.9	+03:04	35.4541	+1.8215	283.6	4.1	4.5	61.9	
J1859−0152g	gpps0343	0.90300	399.3	18:59:45.1	−01:52	32.2035	−2.7074	17.2	9.1	13.0	8.7	
J2026+3656g	gpps0344	1.78552	280.7	20:26:52.6	+36:56	75.9543	−0.7884	176.7	9.1	7.8	5.1	
J1929+1259g	gpps0345	0.00285	90.9	19:29:50.3	+12:59	48.8574	−2.4148	307.5	3.9	2.9	16.7	
J1846+0014g	gpps0346	0.00666	230.0	18:46:24.0	+00:14	32.5680	+1.2287	33.3	5.6	4.8	51.2	
J1856−0039g	gpps0347	0.02340	43.2	18:56:48.9	−00:39	32.9498	−1.4970	523.2	1.9	1.3	31.6	
J1908+0136g	gpps0348	1.10413	310.4	19:08:39.5	+01:36	36.3345	−3.0926	20.6	8.0	14.5	21.9	
J1933+0913g	gpps0349	0.00294	69.4	19:33:51.3	+09:13	46.0115	−5.0837	89.2	3.2	2.4	120.2	
J1838+0028g	gpps0350	0.00187	107.2	18:38:31.0	+00:28	31.8832	+3.0925	255.6	3.1	3.8	54.3	
J1851−0014g	gpps0351	0.16213	319.8	18:51:50.2	−00:14	32.7611	−0.1996	9.4	6.2	4.6	21.2	
J1859+0026Bg	gpps0352	0.00233	191.6	18:59:57.7	+00:26	34.2991	−1.6939	30.3	5.2	4.8	37.8	
J1856−0018g	gpps0353	0.28288	326.3	18:56:41.9	−00:18	33.2530	−1.3132	37.7	6.7	5.8	7.2	
J1920+1030g	gpps0354	0.57102	389.7	19:20:51.1	+10:30	45.6288	−1.6523	94.9	10.3	12.7	29.7	
J1853−0054g	gpps0355	0.30834	442.9	18:53:54.1	−00:54	32.4065	−0.9612	78.8	7.5	6.5	10.8	
J1841−0123g	gpps0356	0.00379	308.2	18:41:08.6	−01:23	30.5135	+1.6520	816.0	6.4	5.9	79.2	(J)
J1845−0144g	gpps0357	0.59396	937.7	18:45:42.8	−01:44	30.7273	+0.4779	586.5	11.2	7.7	36.1	(J)
J1856−0105g	gpps0358	0.86835	329.3	18:56:32.9	−01:05	32.5486	−1.6317	43.5	7.0	6.0	8.1	
J1856−0041g	gpps0359	0.51965	309.2	18:56:05.3	−00:41	32.8494	−1.3485	44.4	6.5	5.6	6.8	
J1855−0115g	gpps0360	2.56229	261.7	18:55:21.8	−01:15	32.2607	−1.4463	54.9	5.9	5.1	10.2	
J1845−0142g	gpps0361	0.12620	564.0	18:45:25.0	−01:42	30.7278	+0.5615	70.2	7.9	6.1	61.0	(J)
J1836−0100g	gpps0362	0.25852	326.5	18:36:58.5	−01:00	30.3834	+2.7566	51.3	7.1	10.0	7.3	
J1843−0128g	gpps0363	2.16489	450.8	18:43:31.2	−01:28	30.7205	+1.0905	44.5	7.5	7.2	4.0	
J1852+0421g	gpps0364	3.16092	294.3	18:52:04.1	+04:21	36.8883	+1.8481	30.9	6.6	8.4	3.9	
J1833−0046g	gpps0365	0.00295	81.4	18:33:53.0	−00:46	30.2442	+3.5585	673.6	2.4	3.1	22.5	
J1946+2433g	gpps0366	0.00857	275.2	19:46:52.9	+24:33	60.9151	−0.2542	94.5	8.6	8.6	···	(J)
J1843−0038g	gpps0367	0.58558	607.5	18:43:54.5	−00:38	31.5012	+1.3819	118.2	10.7	11.4	···	
J1838+0226g	gpps0368	2.12258	252.9	18:38:43.0	+02:26	33.6525	+3.9398	59.1	6.9	12.6	4.9	
J2003+3600g	gpps0369	0.47814	293.1	20:03:58.1	+36:00	72.6185	+2.5203	25.9	11.1	10.4	45.9	
J1908+0002g	gpps0370	1.30000	76.8	19:08:28.5	+00:02	34.9155	−3.7702	10.3	2.7	2.9	5.2	
J1905−0046g	gpps0371	0.76012	288.2	19:05:08.9	−00:46	33.8014	−3.4060	29.8	7.5	11.7	6.0	
J1904−0036g	gpps0372	0.39713	254.3	19:04:45.4	−00:36	33.9043	−3.2433	32.3	6.5	8.0	8.2	
J1909+0651g	gpps0373	0.57807	33.6	19:09:01.6	+06:51	41.0446	−0.7582	16.6	2.1	1.3	13.6	
J1840−0140g	gpps0374	1.92682	279.7	18:40:54.2	−01:40	30.2441	+1.5810	18.3	5.9	5.4	3.8	
J1840−0144g	gpps0376	1.10169	277.9	18:40:53.0	−01:44	30.1736	+1.5504	15.9	5.9	5.3	17.6	
J1857−0110g	gpps0377	0.49673	385.7	18:57:08.4	−01:10	32.5403	−1.8021	7.9	8.1	7.1	14.3	
J1852−0834g	gpps0378	0.24932	190.1	18:52:17.1	−08:34	25.3825	−4.0857	19.8	4.5	6.7	14.0	
J1947+2304g	gpps0379	0.01090	321.0	19:47:28.9	+23:04	59.6924	−1.1014	127.7	9.8	10.2	27.8	
J1902+0926g	gpps0380	0.60543	291.6	19:02:09.7	+09:26	42.5551	+1.9343	12.7	7.7	11.5	5.1	
J1902+0909g	gpps0381	0.68910	353.1	19:02:56.7	+09:09	42.3890	+1.6318	51.5	8.5	12.2	16.1	
J1906+1049g	gpps0382	0.41459	279.1	19:06:21.5	+10:49	44.2582	+1.6495	31.3	7.2	10.3	20.5	
J1919+0126g	gpps0383	0.00190	125.2	19:19:23.0	+01:26	37.4155	−5.5527	161.5	4.1	6.3	56.8	
J1857−0117g	gpps0384	1.22259	353.9	18:57:11.6	−01:17	32.4339	−1.8716	12.8	7.6	6.7	7.1	
J1922+1511g	gpps0385	2.35721	395.0	19:22:23.0	+15:11	49.9333	+0.2120	743.5	10.4	9.2	8.0	(J)
J1836+0014g	gpps0386	0.53046	121.1	18:36:54.5	+00:14	31.4902	+3.3432	19.3	3.3	4.1	5.3	

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25\text{GHz}}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1836+0015g	gpps0387	0.62952	219.8	18:36:07.2	+00:15	31.4013	+3.5192	28.1	5.4	7.1	6.0	
J0622+0339g	gpps0388	0.00877	79.4	06:22:19.4	+03:39	206.3295	−4.8292	288.5	2.6	1.8	10.3	
J1927+1849g	gpps0389	0.31203	200.0	19:27:46.2	+18:49	53.7437	+0.8092	20.8	6.5	4.6	63.3	(2)
J1938+2248g	gpps0390	0.79392	128.4	19:38:38.7	+22:48	58.4633	+0.5143	11.7	5.0	4.5	4.3	
J1938+2301g	gpps0391	0.65507	398.9	19:38:12.5	+23:01	58.6030	+0.7085	137.1	12.0	12.0	2.1	
J1938+2302g	gpps0392	0.05276	303.4	19:38:11.6	+23:02	58.6030	+0.7085	402.1	9.1	8.9	13.0	
J2018+3518g	gpps0393	0.03131	267.0	20:18:48.1	+35:18	73.6865	−0.3455	152.5	8.4	7.1	18.3	
J1836−0150g	gpps0394	0.00546	199.4	18:36:05.8	−01:50	29.5372	+2.5683	661.6	4.8	4.9	76.2	
J1835−0149g	gpps0395	1.27761	102.3	18:35:19.8	−01:49	29.4474	+2.7422	21.3	2.7	3.5	10.8	
J1857−0125g	gpps0396	0.00183	214.0	18:57:21.0	−01:25	32.3369	−1.9651	330.2	5.4	4.9	116.0	
J1827−0125g	gpps0397	0.33796	98.0	18:27:35.1	−01:25	28.9318	+4.6502	184.5	2.7	3.7	113.8	
J1902+0717g	gpps0398	0.35605	449.9	19:02:05.3	+07:17	40.6328	+0.9667	13.8	8.3	11.5	17.4	
J1902+0938g	gpps0399	0.04540	147.3	19:02:10.5	+09:38	42.7363	+2.0237	7.2	4.7	6.3	11.1	
J1913+0453g	gpps0400	0.00609	297.0	19:13:49.7	+04:53	39.8411	−2.7304	45.1	8.2	15.0	118.7	
J1901−0104g	gpps0401	0.73951	261.2	19:01:10.7	−01:04	33.0857	−2.6570	44.9	6.1	6.4	5.6	
J1856−0134g	gpps0402	0.38187	236.2	18:56:40.6	−01:34	32.1333	−1.8802	32.5	5.7	5.1	7.4	
J1932+2121g	gpps0403	0.01424	192.1	19:32:21.2	+21:21	56.4801	+1.0824	339.9	6.6	5.1	12.7	
J1835+0005g	gpps0404	0.02654	116.3	18:35:39.8	+00:05	31.2126	+3.5508	19.4	3.2	4.0	44.6	
J1937+1927g	gpps0405	0.00404	165.9	19:37:16.4	+19:27	55.3876	−0.8474	47.8	5.8	4.3	31.7	
J1900−0126g	gpps0406	0.00400	145.5	19:00:06.1	−01:26	32.6370	−2.5841	77.0	3.9	4.3	41.3	
J1935+1901g	gpps0407	0.89727	362.3	19:35:50.9	+19:01	54.8498	−0.7626	6.8	10.2	8.9	7.3	(2)
J1851+0500g	gpps0408	2.32738	341.3	18:51:47.9	+05:00	37.4352	+2.2029	40.5	8.1	12.5	12.7	
J1830−0106g	gpps0409	0.00176	149.4	18:30:07.5	−01:06	29.5116	+4.2344	254.5	3.9	5.0	49.6	
J1913+0655g	gpps0410	0.75445	256.8	19:13:35.9	+06:55	41.6165	−1.7397	33.2	6.7	9.0	11.3	
J1919+1502g	gpps0411	0.00365	232.6	19:19:57.9	+15:02	49.5264	+0.6643	62.5	7.0	6.0	⋯	(J)
J1829−0116g	gpps0412	1.65320	189.9	18:29:44.0	−01:16	29.3155	+4.2436	11.1	4.8	7.5	5.9	
J1915+0720g	gpps0413	0.00569	122.1	19:15:35.3	+07:20	42.2233	−1.9794	1432.6	4.2	4.6	69.4	
J1913+0837g	gpps0414	2.47046	385.8	19:13:53.8	+08:37	43.1585	−1.0166	20.0	8.5	10.3	5.7	
J1842+0357g	gpps0415	0.67253	194.1	18:42:35.4	+03:57	35.4538	+3.7704	12.1	5.5	7.8	8.5	
J1943+2847g	gpps0416	0.00630	191.6	19:43:36.5	+28:47	64.2168	+2.4976	464.7	7.2	8.3	151.6	
J1842+0407g	gpps0417	0.00394	101.7	18:42:11.9	+04:07	35.5610	+3.9344	302.2	3.4	4.1	27.6	
J1839+0050g	gpps0418	0.63331	179.3	18:39:04.1	+00:50	32.2690	+3.1350	12.5	4.6	5.2	3.0	
J1839+0100g	gpps0419	0.00537	130.1	18:39:27.6	+01:00	32.4647	+3.1251	829.4	3.6	4.3	48.0	
J1903+0317g	gpps0420	0.52116	447.0	19:03:06.7	+03:17	37.1866	−1.0950	13.8	8.4	9.6	14.3	
J2042+4550g	gpps0421	0.54841	298.6	20:42:08.7	+45:50	84.8105	+2.2481	48.6	12.1	8.8	7.6	
J2029+4453g	gpps0422	1.36137	333.2	20:29:10.1	+44:53	82.6716	+3.4957	26.4	50.0	11.5	3.7	
J1920+1340g	gpps0423	1.52571	1053.0	19:20:05.8	+13:40	48.3345	−0.0051	105.0	50.0	25.0	⋯	(J)
J1849−0200g	gpps0424	0.32677	883.0	18:49:59.9	−02:00	30.9792	−0.5961	404.4	11.1	7.5	⋯	(J)
J1858−0128g	gpps0425	0.00788	38.1	18:58:11.6	−01:28	32.3817	−2.1789	822.4	1.7	1.2	21.4	
J1901+1316g	gpps0426	0.74096	155.4	19:01:20.8	+13:16	45.8732	+3.8540	20.8	5.5	7.6	14.1	
J1849+0329g	gpps0427	0.00450	152.1	18:49:04.4	+03:29	35.7743	+2.1182	57.2	4.2	4.8	15.1	
J1858+0724g	gpps0428	0.00770	105.0	18:58:27.7	+07:24	40.3287	+1.8214	71.2	3.7	3.8	31.3	
J1841+0112g	gpps0429	0.17842	152.6	18:41:13.7	+01:12	32.8506	+2.8258	119.0	4.1	4.6	34.1	
J1921+1238g	gpps0430	2.13395	139.9	19:21:33.2	+12:38	47.5902	−0.8031	22.4	4.9	4.4	8.3	
J1847+0342g	gpps0431	0.00429	81.1	18:47:30.6	+03:42	35.7887	+2.5634	202.8	2.9	2.9	217.6	
J1910+0423g	gpps0432	0.09324	339.9	19:10:10.3	+04:23	38.9719	−2.1550	655.1	8.4	13.1	10.1	

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1911+0329g	gpps0433	0.05823	210.1	19:11:21.7	+03:29	38.3181	−2.8281	31.8	5.9	8.6	11.0	
J1943+2446g	gpps0434	0.00559	237.4	19:43:06.8	+24:46	60.6952	+0.5507	631.2	7.9	8.3	125.7	
J1929+1526g	gpps0435	0.39187	204.6	19:29:47.4	+15:26	51.0096	−1.2287	45.9	6.6	5.2	26.4	
J1909+0423g	gpps0436	0.51158	254.9	19:09:31.7	+04:23	38.8995	−2.0119	33.6	6.4	9.0	13.6	
J1957+2754g	gpps0437	0.00331	233.7	19:57:13.6	+27:54	64.9798	−0.5320	211.5	7.7	7.9	40.0	
J1842+0131g	gpps0438	1.59027	115.4	18:42:53.0	+01:31	33.3170	+2.5996	30.6	3.4	4.0	2.3	
J1911+0314g	gpps0439	0.53116	167.3	19:11:47.2	+03:14	38.1201	−3.0502	20.9	5.0	6.3	12.4	
J1902−0107g	gpps0440	0.00613	290.2	19:02:36.8	−01:07	33.2105	−2.9962	104.3	7.0	8.4	87.5	(J)
J1904+0056g	gpps0441	0.00585	51.4	19:04:58.3	+00:56	35.3076	−2.5843	360.8	2.2	1.5	17.0	
J1902+0011g	gpps0442	0.00593	248.5	19:02:40.2	+00:11	34.3777	−2.4146	135.4	5.7	6.1	47.4	
J1904+0050g	gpps0443	0.49618	305.5	19:04:07.6	+00:50	35.1256	−2.4402	55.0	6.0	8.2	18.5	
J1959+2758g	gpps0444	0.00515	142.8	19:59:15.2	+27:58	65.2714	−0.8784	53.5	5.7	7.0	24.5	
J1838−0014g	gpps0445	0.36045	282.8	18:38:11.9	−00:14	31.2053	+2.8347	117.8	6.2	7.7	37.8	
J1856+0711g	gpps0446	0.61104	325.7	18:56:28.2	+07:11	39.9064	+2.1602	27.3	8.2	13.9	4.0	
J1909+0310g	gpps0447	1.97205	111.0	19:09:51.7	+03:10	37.8556	−2.6459	55.1	3.7	4.2	11.2	
J1907−0119g	gpps0448	0.05899	154.8	19:07:35.6	−01:19	33.5977	−4.1967	20.9	4.4	5.5	21.8	
J1854+1046Bg	gpps0449	0.51100	90.8	18:54:36.0	+10:46	42.8922	+4.1951	9.9	3.6	3.7	6.0	
J2128+5051g	gpps0450	0.33103	105.0	21:28:13.7	+50:51	93.6400	−0.0847	28.3	3.9	3.4	16.5	
J2116+4906g	gpps0451	1.60231	293.2	21:16:58.5	+49:06	91.1255	−0.0542	48.1	10.2	8.3	7.0	
J1921+1720g	gpps0452	0.21987	217.9	19:21:41.4	+17:20	51.7511	+1.3786	33.7	7.0	5.2	11.5	
J2101+4636g	gpps0453	0.29529	435.7	21:01:33.2	+46:36	87.5315	+0.1433	133.0	50.0	25.0	42.9	
J1857−0026g	gpps0454	0.02235	312.7	18:57:01.8	−00:26	33.1798	−1.4438	195.4	6.7	5.8	35.2	
J2057+4557g	gpps0455	0.22538	457.0	20:57:58.7	+45:57	86.5970	+0.1521	133.6	50.0	25.0	45.5	(J)
J1846−0211g	gpps0456	0.78817	838.0	18:46:12.6	−02:11	30.3917	+0.1663	98.9	9.6	6.2	21.0	(J)
J1824−0117g	gpps0457	1.37445	200.3	18:24:58.5	−01:17	28.7530	+5.2926	10.9	5.4	12.2	3.6	
J1906+1211g	gpps0458	3.80499	292.4	19:06:42.0	+12:11	45.5078	+2.2000	49.7	8.3	11.4	11.4	
J1902+1022g	gpps0459	0.50191	289.3	19:02:42.5	+10:22	43.4495	+2.2421	28.5	8.0	12.4	4.2	
J1917+0615g	gpps0460	0.00397	172.5	19:17:20.2	+06:15	41.4688	−2.8427	1161.9	5.4	8.2	73.0	
J1924+1201g	gpps0461	0.00318	99.2	19:24:08.3	+12:01	47.3411	−1.6522	205.3	4.1	3.2	59.2	
J2104+4644g	gpps0462	0.10823	204.3	21:04:24.2	+46:44	87.9638	−0.1265	38.3	6.5	4.7	5.2	
J1830−0156g	gpps0463	0.00752	242.3	18:30:40.8	−01:56	28.8256	+3.7246	20.3	5.8	10.0	46.9	
J2046+4253g	gpps0464	0.33115	622.1	20:46:54.8	+42:53	83.0161	−0.2593	231.4	50.0	25.0	⋯	(J)
J1827−0216g	gpps0465	0.28548	186.6	18:27:42.7	−02:16	28.1919	+4.2323	26.2	4.7	7.2	13.6	
J1859−0224g	gpps0466	0.00617	89.4	18:59:40.1	−02:24	31.7235	−2.9290	124.0	2.7	3.2	26.8	
J1922+1730g	gpps0467	0.83301	270.4	19:22:06.0	+17:30	51.9466	+1.3720	31.2	8.4	5.8	12.5	
J0623+0220g	gpps0468	0.47220	32.1	06:23:24.7	+02:20	207.6320	−5.1528	24.4	1.4	0.4	10.0	
J0643+0350g	gpps0469	1.14486	122.0	06:43:01.8	+03:50	208.5776	−0.1272	21.9	3.7	2.2	7.0	
J0641+0359g	gpps0470	0.64621	160.4	06:41:12.5	+03:59	208.2181	−0.4533	30.8	5.7	2.7	3.8	
J1917+1556g	gpps0471	0.00292	72.0	19:17:19.2	+15:56	50.0314	+1.6523	180.2	3.5	2.4	38.1	
J1929+1337g	gpps0472	1.64251	301.4	19:29:40.3	+13:37	49.3954	−2.0759	11.4	9.3	9.2	5.8	
J1916+1244g	gpps0473	0.16315	222.9	19:16:02.4	+12:44	47.0456	+0.4301	11.8	6.4	6.0	9.4	
J1931+1428g	gpps0474	0.00261	241.3	19:31:48.4	+14:28	50.3983	−2.1183	157.7	7.8	6.2	33.5	
J1900+0947g	gpps0475	0.00241	242.6	19:00:57.6	+09:47	42.7278	+2.3559	72.4	7.0	11.0	117.1	
J1917+1551g	gpps0476	0.80933	326.7	19:17:07.3	+15:51	49.9336	+1.6561	14.3	9.8	9.1	2.8	
J1909+1338g	gpps0477	3.86482	234.6	19:09:16.6	+13:38	47.0720	+2.2874	14.4	7.4	8.4	1.7	
J1914+0905g	gpps0478	0.61723	296.7	19:14:54.5	+09:05	43.6965	−1.0167	19.1	7.2	7.9	12.3	

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1900+1017g	gpps0479	0.37150	167.9	19:00:34.8	+10:17	43.1339	+2.6687	27.0	5.4	7.9	9.5	
J1937+1912g	gpps0480	0.00509	345.5	19:37:54.5	+19:12	55.2409	−1.1014	109.2	10.1	9.0	96.9	
J1927+2008g	gpps0481	0.63496	354.9	19:27:20.1	+20:08	54.8496	+1.5252	21.3	10.7	9.3	3.7	
J1830−0206g	gpps0482	1.05534	221.9	18:30:40.8	−02:06	28.6748	+3.6468	8.3	5.3	8.0	5.4	
J1825−0208g	gpps0483	3.30735	192.9	18:25:43.2	−02:08	28.0765	+4.7332	20.3	5.0	9.3	2.9	
J1849−0145g	gpps0484	0.67417	682.5	18:49:20.9	−01:45	31.1249	−0.3390	38.0	8.6	5.9	25.7	
J1849+0623g	gpps0485	0.01459	129.4	18:49:50.0	+06:23	38.4378	+3.2617	439.1	4.2	5.2	27.4	
J2001+2856g	gpps0486	1.44555	233.1	20:01:09.2	+28:56	66.3205	−0.7202	20.1	7.7	7.7	3.3	
J1909+0137g	gpps0487	1.88142	330.7	19:09:14.7	+01:37	36.4082	−3.2196	10.1	8.8	18.7	6.0	
J1902−0012g	gpps0488	14.3089	126.6	19:02:03.8	−00:12	33.9623	−2.4570	8.4	3.6	4.1	2.6	
J2004+3003g	gpps0489	0.08074	124.3	20:04:36.2	+30:03	67.6657	−0.7626	363.9	5.2	6.5	11.2	
J1909+0157g	gpps0490	0.50258	249.1	19:09:46.0	+01:57	36.7749	−3.1773	20.9	6.7	10.7	2.8	
J1921+1733g	gpps0491	2.00974	228.9	19:21:00.8	+17:33	51.8761	+1.6280	20.4	7.4	5.4	2.9	
J1844−0223g	gpps0492	0.92499	305.6	18:44:54.8	−02:23	30.0619	+0.3611	54.3	5.8	4.5	8.6	
J1845−0229Ag	gpps0493	0.65772	832.0	18:45:22.6	−02:29	30.0243	+0.2118	137.4	9.6	6.3	32.3	(J)
J1918+0621g	gpps0494	0.00210	63.1	19:18:00.6	+06:21	41.6124	−2.9334	1253.5	2.9	1.9	13.0	
J1929+1337g	gpps0495	0.20332	282.4	19:29:28.2	+13:37	49.3709	−2.0334	37.3	8.7	7.8	7.1	
J1933+2225g	gpps0496	0.30705	70.4	19:33:57.9	+22:25	57.6026	+1.2709	62.7	3.6	2.9	33.0	
J1846−0200g	gpps0497	0.66839	97.7	18:46:36.2	−02:00	30.5873	+0.1562	11.0	2.7	2.8	4.8	
J1924+1835g	gpps0498	0.20098	282.6	19:24:24.9	+18:35	53.1618	+1.3980	12.4	8.8	5.9	10.4	
J1921+1808g	gpps0499	0.00566	137.9	19:21:35.4	+18:08	52.4526	+1.7791	30.9	5.0	3.9	48.5	
J1939+1848g	gpps0500	0.00336	79.3	19:39:01.5	+18:48	55.0216	−1.5276	708.9	3.7	2.8	42.5	
J1828−0003g	gpps0501	3.80710	93.0	18:28:44.0	−00:03	30.2924	+5.0271	⋯	2.7	3.7	⋯	(2, 3)
J1853+0209g	gpps0502	⋯	350.0	18:53:06.5	+02:09	35.0384	+0.6100	⋯	6.7	5.5	⋯	(2)
J1855−0154g	gpps0503	⋯	417.0	18:55:09.5	−01:54	31.6632	−1.6945	⋯	8.3	7.3	⋯	(2)
J1855−0054g	gpps0504	⋯	577.0	18:55:21.0	−00:54	32.5744	−1.2821	⋯	10.1	8.9	⋯	(2)
J1859+0832g	gpps0505	⋯	259.0	18:59:27.1	+08:32	41.4463	+2.1182	⋯	7.0	11.1	⋯	(2)
J1918+0342g	gpps0506	⋯	174.0	19:18:21.9	+03:42	39.318	−4.2787	⋯	5.6	9.7	⋯	(2)
J1918+1514g	gpps0507	⋯	134.0	19:18:57.3	+15:14	49.5909	+0.9743	⋯	4.9	4.2	⋯	(2)
J1932+2126g	gpps0508	⋯	126.0	19:32:51.4	+21:26	56.6106	+1.0165	⋯	4.9	3.9	⋯	(2)
J1828−0038g	gpps0509	2.42553	70.0	18:28:15.0	−00:38	29.7164	4.86720	7.8	2.2	2.7	1.6	(2)
J1908+0911g	gpps0510	5.16605	132.0	19:08:08.8	+09:11	43.0117	+0.5084	1.4	4.3	3.9	1.1	(2)
J1921+1006g	gpps0511	3.34548	362.0	19:21:44.0	+10:06	45.3771	−2.0318	2.7	9.9	14.2	2.1	(2)
J1948+2314g	gpps0512	1.47107	184.0	19:48:40.2	+23:14	59.9858	−1.2709	0.70	6.7	7.9	4.9	(2)
J1858−0113g	gpps0513	1.53150	280.0	18:58:52.0	−01:13	32.6941	−2.2083	7.8	6.6	6.0	3.2	(2)
J1943+2205g	gpps0514	0.00468	211.2	19:43:40.8	+22:05	58.4203	−0.8485	61.6	7.3	8.0	21.1	
J1845+0417g	gpps0515	1.69692	164.0	18:45:33.0	+04:17	36.0854	+3.2631	3.1	4.8	5.8	2.3	(2)
J1900−0152g	gpps0516	1.38483	314.0	19:00:56.1	−01:52	32.3482	−2.9656	14.5	7.4	9.4	9.1	(2)
J1911+0310g	gpps0517	1.33264	167.7	19:11:18.3	+03:10	38.0220	−2.9656	7.7	5.0	6.2	1.2	(2)
J1915+1045g	gpps0518	1.54588	123.0	19:15:32.0	+10:45	45.2373	−0.3812	3.3	4.3	3.7	2.3	(2)
J1948+2438g	gpps0519	1.90306	450.0	19:48:23.4	+24:38	61.1599	−0.5084	5.0	14.0	17.0	3.2	(2)
J1956+2911g	gpps0520	3.81605	265.0	19:56:35.6	+29:11	66.0026	+0.2541	1.9	8.2	8.0	0.44	(2)
J1845+0326g	gpps0521	0.96793	144.0	18:45:42.0	+03:26	35.3366	+2.8400	3.3	4.2	4.8	4.6	(2)
J1849+0619g	gpps0522	2.01123	110.0	18:49:35.0	+06:19	38.3492	+3.2864	6.2	3.8	4.5	5.6	(2)
J1938+1748g	gpps0523	7.10597	56.0	19:38:29.6	+17:48	54.0912	−1.9061	1.8	3.0	2.2	0.44	(2)
J2014+3326g	gpps0524	0.97728	333.0	20:14:24.7	+33:26	71.6278	−0.6773	0.12	10.8	10.7	3.5	(2)

Table A1
(Continued)

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1902+0557g	gpps0525	⋯	414.0	19:02:55.5	+05:57	39.5388	+0.1695	⋯	7.3	6.1	⋯	(2)
J1855−0211g	gpps0526	⋯	304.0	18:55:32.0	−02:11	31.4501	−1.9086	⋯	6.6	5.9	⋯	(2)
J1900+0908g	gpps0527	⋯	264.0	19:00:19.2	+09:08	42.0823	+2.2027	⋯	7.3	11.4	⋯	(2)
J0637+0332g	gpps0528	⋯	152.0	06:37:40.7	+03:32	208.2107	−1.4401	⋯	5.2	2.5	⋯	(2)
J1859+0239Bg	gpps0529	0.84874	624.0	18:59:18.4	+02:39	36.1937	−0.5373	9.2	9.5	7.1	19.7	(2)
J0651−0055g	gpps0530	1.05070	150.0	06:51:08.3	−00:55	213.7138	−0.4660	82.0	5.2	2.6	22.9	
J1903+0829g	gpps0531	0.00409	334.8	19:03:39.2	+08:29	41.8829	+1.1745	86.1	7.6	10.3	35.6	
J1941+2230g	gpps0532	3.55157	40.0	19:41:43.6	+22:30	58.5408	−0.2544	39.6	2.8	2.1	4.3	
J1855−0221g	gpps0533	0.00277	223.3	18:55:56.3	−02:21	31.3452	−2.0758	314.1	5.5	5.0	43.0	(J)
J1901−0015g	gpps0534	0.51707	200.4	19:01:11.6	−00:15	33.8155	−2.2878	19.9	5.2	5.1	12.1	
J0541+2959g	gpps0535	0.00321	67.3	05:41:44.4	+29:59	178.665	−0.1694	114.6	1.9	1.5	25.1	
J1949+2731g	gpps0536	0.84714	190.4	19:49:21.5	+27:31	63.7525	+0.7627	15.0	7.0	7.7	5.8	
J0528+3529g	gpps0537	0.07824	111.9	05:28:28.9	+35:29	172.526	+0.4659	576.6	3.0	1.9	11.5	
J0520+3722g	gpps0538	0.00792	89.0	05:20:13.5	+37:22	170.0359	+0.1528	737.3	2.3	1.7	41.9	
J0653+0443g	gpps0539	0.04753	27.3	06:53:03.8	+04:43	208.9132	+2.5112	1190.5	1.3	0.2	26.2	
J0417+5058g	gpps0540	0.29136	34.4	04:17:44.9	+50:58	152.4946	+0.3389	28.7	1.2	1.3	40.4	
J1920+1817g	gpps0541	1.06540	256.0	19:20:27.3	+18:17	52.4552	+2.0857	63.6	8.3	5.9	18.5	
J1950+2728g	gpps0542	1.67043	226.6	19:50:21.0	+27:28	63.8259	+0.5507	38.3	7.7	7.9	4.6	
J1951+2352g	gpps0543	0.04839	259.2	19:51:21.8	+23:52	60.8428	−1.4821	58.1	8.5	8.9	22.1	
J2015+3404g	gpps0544	0.00428	208.0	20:15:14.5	+34:04	72.2546	−0.4662	640.2	6.9	6.6	⋯	(J)
J1844−0202g	gpps0545	0.76145	628.0	18:44:00.8	−02:02	30.2689	+0.7201	30.1	8.7	7.4	12.0	(J)
J1911+0305g	gpps0546	0.00586	147.0	19:11:53.6	+03:05	38.0144	−3.1349	11.5	4.6	5.6	30.9	
J1845+0201g	gpps0547	0.00431	56.6	18:45:03.0	+02:01	34.0118	+2.3465	966.9	2.2	1.7	140.2	
J1844+0144g	gpps0548	1.50560	373.0	18:44:55.2	+01:44	33.7423	+2.2452	15.1	8.6	9.7	9.3	
J1814+0045g	gpps0549	0.00231	124.0	18:14:10.4	+00:45	29.3310	+8.6305	446.4	3.9	9.0	7.8	
J1921+1632g	gpps0550	0.05848	279.5	19:21:32.9	+16:32	51.034	+1.0168	133.1	8.4	6.1	12.7	
J1925+1934g	gpps0551	0.34539	248.1	19:25:50.6	+19:34	54.1892	+1.5673	10.7	8.0	5.5	7.6	
J1843−0207g	gpps0552	0.45731	455.7	18:43:49.0	−02:07	30.1711	+0.7251	34.4	7.1	5.9	30.8	
J1843+0526g	gpps0553	2.03497	250.5	18:43:43.2	+05:26	36.9127	+4.1940	25.6	7.5	16.3	4.7	
J1948+2428g	gpps0554	1.33395	361.5	19:48:10.2	+24:28	60.9886	−0.5507	8.3	11.0	11.8	4.2	
J1844−0127g	gpps0555	0.02914	368.1	18:44:18.3	−01:27	30.8177	+0.9199	87.7	6.6	5.8	20.4	
J0514+4010g	gpps0556	2.62549	106.5	05:14:59.3	+40:10	167.1652	+0.9328	62.7	2.8	1.9	3.8	
J1837+0250g	gpps0557	0.09466	101.0	18:37:49.9	+02:50	33.9126	+4.3202	8.9	3.1	4.0	8.4	
J2015+3524g	gpps0558	0.45752	227.9	20:15:38.1	+35:24	73.4132	+0.2124	8.4	7.2	6.5	7.1	
J1837+0420g	gpps0559	1.00949	181.4	18:37:43.7	+04:20	35.2386	+5.0212	7.1	5.4	10.5	4.6	
J0416+5201g	gpps0560	0.01825	140.5	04:16:27.2	+52:01	151.6151	+0.9756	355.5	4.4	2.8	11.7	
J1846+0336g	gpps0561	1.51273	296.0	18:46:05.6	+03:36	35.5313	+2.8291	6.7	7.4	11.3	9.7	
J1957+2711g	gpps0562	0.02337	210.4	19:57:35.8	+27:11	64.4128	−0.9744	176.7	7.4	7.8	16.1	
J1846−0253g	gpps0563	2.20944	992.0	18:46:26.2	−02:53	29.7768	−0.2057	30.2	10.7	6.5	12.1	
J1940+2102g	gpps0564	0.03005	76.2	19:40:13.6	+21:02	57.0995	−0.6778	170.0	3.7	3.0	12.0	
J1842−0138g	gpps0565	0.00271	209.9	18:42:31.0	−01:38	30.4532	+1.2351	157.3	5.1	4.4	35.9	
J1845+0317g	gpps0566	0.00185	77.2	18:45:18.0	+03:17	35.1321	+2.8479	480.4	2.8	2.8	63.0	
J1838+0228g	gpps0567	0.65316	148.1	18:38:21.5	+02:28	33.6529	+4.0405	24.2	4.2	5.3	4.1	
J1844+0315g	gpps0568	0.31891	23.0	18:44:32.2	+03:15	35.0520	+3.0244	26.4	1.3	1.0	13.5	
J1920+0941g	gpps0569	18.2869	54.2	19:20:16.4	+09:41	44.8462	−1.9065	11.4	2.8	1.8	1.2	
J1810−0100g	gpps0570	1.10616	78.1	18:10:29.7	−01:00	27.3270	+8.6362	122.9	2.4	3.5	3.1	

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1842−0148g	gpps0571	0.42894	450.9	18:42:31.0	−01:48	30.3024	+1.1577	51.7	7.6	7.4	32.0	
J1845−0243g	gpps0572	0.34526	747.0	18:45:32.3	−02:43	29.8280	+0.0656	120.0	8.7	5.8	69.9	(J)
J1907+0029g	gpps0573	0.06364	120.4	19:07:23.4	+00:29	35.1861	−3.3264	482.3	3.6	4.4	11.4	
J1854−0230g	gpps0574	0.68750	550.5	18:54:18.1	−02:30	31.0271	−1.7792	736.7	10.9	12.2	131.2	
J1845−0229Bg	gpps0575	0.46305	846.0	18:45:57.8	−02:29	30.0976	+0.0847	87.1	9.8	6.2	31.8	(J)
J1843−0236g	gpps0576	0.94609	242.0	18:43:20.2	−02:36	29.6940	+0.6149	23.1	5.3	4.3	5.1	
J1857−0230g	gpps0577	0.03515	134.5	18:57:20.5	−02:30	31.3694	−2.4571	494.5	3.5	4.0	10.5	
J1906−0036g	gpps0578	0.12943	260.0	19:06:44.9	−00:36	34.1336	−3.6855	6.9	7.0	11.3	12.0	
J1907+0014g	gpps0579	0.02453	172.6	19:07:56.7	+00:14	35.0381	−3.5584	460.8	4.9	5.9	23.3	
J1959+3036g	gpps0580	2.88846	174.9	19:59:34.5	+30:36	67.5579	+0.4494	98.6	6.5	7.0	11.3	
J1819−0050g	gpps0581	0.00660	103.3	18:19:30.6	−00:50	28.5216	+6.7121	253.7	3.0	4.5	21.8	
J1845−0254g	gpps0582	0.49266	735.0	18:45:32.3	−02:54	29.6772	−0.0117	90.0	8.8	5.8	66.3	(J)
J2004+3304g	gpps0583	1.19337	410.1	20:04:08.1	+33:04	70.1605	+0.9320	27.7	14.7	13.4	5.4	
J1906−0200g	gpps0584	0.00253	138.4	19:06:56.3	−02:00	32.9106	−4.3632	12.9	3.9	5.0	37.0	
J1951+2857g	gpps0585	1.62538	208.3	19:51:25.5	+28:57	65.2201	+1.1014	16.2	7.3	7.7	3.1	
J1856−0235g	gpps0586	0.53517	204.7	18:56:45.2	−02:35	31.2270	−2.3648	17.7	5.1	4.9	25.9	
J2000+3207g	gpps0587	0.38844	374.9	20:00:19.4	+32:07	68.9321	+1.1110	24.3	12.7	11.4	4.2	
J1907+0009g	gpps0588	0.00237	83.0	19:07:21.5	+00:09	34.8954	−3.4666	15.4	2.8	3.2	44.4	
J1849+0034g	gpps0589	1.10545	487.1	18:49:22.2	+00:34	33.2040	+0.7203	23.6	7.8	6.7	5.0	
J2000+3157g	gpps0590	0.00350	270.0	20:00:03.4	+31:57	68.7568	+1.0690	52.9	8.6	8.1	42.3	
J1821+0044g	gpps0591	0.00271	126.9	18:21:31.7	+00:44	30.1690	+6.9900	15.6	3.8	7.2	38.1	
J1836+0117g	gpps0592	0.00381	178.0	18:36:11.7	+01:17	32.3480	+3.9823	58.2	4.7	6.2	35.5	
J1841+0217g	gpps0593	0.29672	233.4	18:41:05.0	+02:17	33.7912	+3.3467	16.4	6.0	7.7	8.5	
J1843+0333g	gpps0594	0.82325	294.4	18:43:44.8	+03:33	35.2204	+3.3280	13.9	7.9	14.0	5.9	
J1943+2608g	gpps0595	0.63562	118.4	19:43:55.9	+26:08	61.9502	+1.1149	27.4	5.0	6.7	3.5	
J1841+0235g	gpps0596	0.25863	193.6	18:41:54.1	+02:35	34.1581	+3.3042	12.8	5.2	6.1	22.6	
J1819−0040g	gpps0597	0.16007	57.9	18:19:10.5	−00:40	28.6276	+6.8771	79.8	1.9	2.0	12.3	
J1844+0455g	gpps0598	0.00470	241.4	18:44:56.1	+04:55	36.5785	+3.6855	22.4	6.9	12.7	27.5	
J1829−0235g	gpps0599	0.00743	103.3	18:29:35.0	−02:35	28.1177	+3.6861	75.7	2.7	3.6	50.6	
J1907+0052g	gpps0600	0.00292	162.9	19:07:57.5	+00:52	35.5765	−3.3044	112.3	4.5	5.5	44.0	
J1908+0053g	gpps0601	0.55290	210.4	19:08:06.8	+00:53	35.6253	−3.3042	18.1	5.5	7.1	5.5	
J2129+4430g	gpps0602	0.64933	87.1	21:29:49.0	+44:30	89.4575	−4.8717	36.3	3.9	3.8	14.4	
J1939+2425g	gpps0603	0.00578	186.9	19:39:02.0	+24:25	59.9077	+1.2265	31.9	6.8	8.0	56.9	
J2007+3343g	gpps0604	0.00268	217.2	20:07:53.0	+33:43	71.1317	+0.6232	586.8	7.1	6.8	198.7	
J0557+2442g	gpps0605	1.48216	195.1	05:57:20.0	+24:42	184.9714	+0.0845	20.8	50.0	5.4	7.2	
J1816+0216g	gpps0606	0.00404	124.7	18:16:06.9	+02:16	30.9272	+8.8964	16.7	4.1	9.6	20.7	
J1919+0727g	gpps0607	0.86682	183.6	19:19:11.2	+07:27	42.7389	−2.7164	19.2	5.7	8.3	4.8	
J2021+3740g	gpps0608	0.54809	201.3	20:21:49.3	+37:40	75.9564	+0.4664	45.2	6.6	5.9	14.0	
J1941+2541g	gpps0609	1.05475	122.5	19:41:10.1	+25:41	61.2527	+1.4320	77.1	5.1	6.8	18.0	
J2011+3520g	gpps0610	0.94322	438.1	20:11:04.8	+35:20	72.8741	+0.9282	313.9	50.0	13.8	7.7	
J1911−0129g	gpps0611	1.12681	204.8	19:11:08.3	−01:29	33.8521	−5.0622	32.5	5.9	12.2	3.2	
J1817−0012g	gpps0612	0.65443	72.7	18:17:52.6	−00:12	28.8970	+7.3655	85.1	2.3	3.1	15.9	
J1821+0007g	gpps0613	0.00422	55.2	18:21:02.9	+00:07	29.5571	+6.8116	3045.5	1.9	1.9	67.6	
J1846+0507g	gpps0614	0.00307	101.6	18:46:50.5	+05:07	36.9680	+3.3504	83.6	3.5	4.1	37.5	
J1901+1140g	gpps0615	0.34071	183.3	19:01:14.7	+11:40	44.4405	+3.1526	30.1	6.0	8.8	77.4	
J1850+0707g	gpps0616	0.03393	160.8	18:50:57.3	+07:07	39.2205	+3.3465	9.0	5.1	7.3	5.4	

Table A1
(Continued)

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25\mathrm{GHz}}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1959+3141g	gpps0617	0.51453	340.6	19:59:10.7	+31:41	68.4240	+1.0829	41.6	11.2	11.0	9.4	(J)
J2000+2806g	gpps0618	0.72986	225.5	20:00:39.7	+28:06	65.5463	−1.0738	36.6	7.6	7.9	17.8	
J1816−0021g	gpps0619	0.04165	89.3	18:16:34.0	−00:21	28.6104	+7.5869	9.7	2.7	4.1	8.6	
J1831+0101g	gpps0620	0.18228	173.0	18:31:38.8	+01:01	31.5877	+4.8713	17.7	4.8	7.9	7.8	
J1958+3156g	gpps0621	5.56472	401.2	19:58:32.0	+31:56	68.5170	+1.2553	8.0	14.7	13.5	4.2	
J1835+0114g	gpps0622	2.19976	229.7	18:35:19.4	+01:14	32.1994	+4.1512	2.6	6.0	10.7	4.7	
J2032+4055g	gpps0623	0.04874	372.4	20:32:38.3	+40:55	79.8385	+0.6459	73.7	8.1	10.1	⋯	(J)
J2022+3812g	gpps0624	0.29375	460.0	20:22:46.2	+38:12	76.5314	+0.6143	66.5	50.0	15.1	16.4	(J)
J2046+4236g	gpps0625	0.52382	466.0	20:46:32.5	+42:36	82.7557	−0.3808	92.7	50.0	25.0	⋯	(J)
J1821+0017g	gpps0626	0.00756	192.0	18:21:26.4	+00:17	29.7527	+6.8017	7.4	5.8	17.8	24.6	
J2019+3718g	gpps0627	0.50520	461.6	20:19:08.7	+37:18	75.3789	+0.6896	106.3	50.0	14.8	6.4	(J)
J2103+4620g	gpps0628	0.23516	209.4	21:03:57.3	+46:20	87.6072	−0.3425	157.2	6.7	4.8	13.2	
J1820+0006g[a]	gpps0629	2.40495	187.9	18:20:27.7	+00:06	29.4798	+6.9371	105.6	5.7	17.5	13.3	
J2106+4602g	gpps0630	1.18445	172.0	21:06:22.4	+46:02	87.6728	−0.8467	21.8	5.5	4.5	5.6	
J1908−0022g	gpps0631	0.47251	174.3	19:08:21.9	−00:22	34.5235	−3.9406	27.7	5.0	6.2	5.6	
J1816−0038g	gpps0632	0.03065	125.2	18:16:38.9	−00:38	28.3747	+7.4425	27.8	3.7	7.4	4.7	
J1908+0029g	gpps0633	0.00342	165.3	19:08:30.4	+00:29	35.3244	−3.5693	39.9	4.7	5.7	⋯	
J1910+0130g	gpps0634	0.00564	118.4	19:10:43.9	+01:30	36.4792	−3.6010	71.5	3.8	4.6	14.1	
J1841−0258g	gpps0635	0.59630	355.7	18:41:60.0	−02:58	29.2024	+0.7375	96.1	6.2	5.1	10.0	(J)
J1835+0158g	gpps0636	0.00332	181.5	18:35:22.0	+01:58	32.8576	+4.4747	43.7	5.0	7.7	24.2	
J1834+0148g	gpps0637	0.16198	179.4	18:34:42.4	+01:48	32.6417	+4.5499	127.9	4.9	7.7	68.0	
J0408+4955g	gpps0638	0.01144	73.7	04:08:07.2	+49:55	152.0906	−1.4678	679.0	2.1	1.7	167.7	
J1911+1440g[a]	gpps0639	0.58247	87.2	19:11:20.9	+14:40	48.2363	+2.3388	21.4	3.8	2.8	2.6	
J1841−0238g[a]	gpps0640	0.88404	165.9	18:41:15.0	−02:38	29.4172	+1.0585	10.8	4.0	3.9	7.1	
J2042+4353g	gpps0641	0.01602	292.6	20:42:53.2	+43:53	83.3513	+0.9410	52.9	9.9	7.8	120.7	
J2100+4712g	gpps0642	1.45872	233.7	21:00:30.5	+47:12	87.8700	+0.6780	7.3	7.6	5.1	10.4	
J0414+4859g	gpps0643	0.80672	72.7	04:14:57.7	+48:59	153.5453	−1.3968	34.9	2.1	1.7	38.2	
J1821−0013g	gpps0644	2.21759	112.1	18:21:26.1	−00:13	29.2895	+6.5654	13.2	3.3	5.2	7.1	
J2053+4455g[a]	gpps0645	10.7000	440.6	20:53:14.6	+44:55	85.3137	+0.1499	6.9	50.0	19.7	1.7	
J1833+0050g[a]	gpps0646	0.90370	190.9	18:33:56.3	+00:50	31.6864	+4.2780	16.3	5.1	7.6	13.3	
J1834+0143g	gpps0647	0.00464	201.8	18:34:30.6	+01:43	32.5442	+4.5549	27.7	5.5	9.8	23.0	
J1821−0031g[a]	gpps0648	4.44088	111.1	18:21:00.3	−00:31	28.9716	+6.5230	7.9	3.2	5.0	3.7	
J0630+1002g	gpps0649	2.88147	149.3	06:30:24.8	+10:02	201.6099	−0.0441	47.8	4.9	2.4	4.8	
J2103+4602g	gpps0650	1.35994	211.0	21:03:03.1	+46:02	87.2813	−0.4236	10.3	6.7	4.9	5.8	
J1857+0310g	gpps0651	0.16312	588.5	18:57:41.6	+03:10	36.4686	+0.0566	31.0	8.8	6.3	52.5	
J1820+0058g	gpps0652	0.03362	86.1	18:20:18.7	+00:58	30.2455	+7.3711	18.1	2.7	4.0	11.5	
J0605+1937g	gpps0653	0.69819	116.8	06:05:54.6	+19:37	190.3619	−0.7003	23.5	3.2	1.9	8.2	
J0625+1403g	gpps0654	0.72791	134.5	06:25:06.6	+14:03	197.4487	+0.6779	11.2	4.0	2.1	7.7	
J0620+1711g	gpps0655	0.44103	146.9	06:20:30.4	+17:11	194.1703	+1.1641	28.1	4.7	2.3	5.6	
J1910−0018g[a]	gpps0656	2.06356	110.1	19:10:26.0	−00:18	34.8336	−4.3625	2.6	3.5	4.4	2.8	
J1905−0128g[a]	gpps0657	1.07099	100.3	19:05:33.2	−01:28	33.2283	−3.8126	0.12	3.1	3.8	1.8	
J2044+4331g[a]	gpps0658	16.6064	499.7	20:44:03.3	+43:31	83.1968	+0.5507	4.9	50.0	25.0	1.8	
J1840+0351g	gpps0659	0.00516	201.0	18:40:39.2	+03:51	35.1367	+4.1515	74.6	5.8	9.6	28.4	
J1942+2029g	gpps0660	0.04456	139.3	19:42:26.4	+20:29	56.8797	−1.3981	34.6	5.3	4.2	11.2	
J1825+0057g	gpps0661	0.00602	128.9	18:25:59.1	+00:57	30.8793	+6.1001	17.2	3.8	6.3	19.4	
J1915+1714g	gpps0662	2.00094	57.1	19:15:46.5	+17:14	51.0096	+2.5840	24.1	3.1	2.1	6.2	

Table A1
(Continued)

Pulsar Name[*]	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25\mathrm{GHz}}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1835+0301g	gpps0663	2.29889	212.3	18:35:20.4	+03:01	33.7906	+4.9564	18.8	6.1	13.3	11.2	
J1832+0204g	gpps0664	1.21279	226.4	18:32:54.3	+02:04	32.6422	+5.0837	51.0	6.5	15.3	49.2	
J1832+0113g	gpps0665	0.00634	81.8	18:32:49.0	+01:13	31.9001	+4.7022	41.4	2.5	3.3	30.2	
J1818−0051g	gpps0666	2.20669	66.8	18:18:37.1	−00:51	28.4089	+6.9051	10.3	2.1	2.7	1.6	
J1849+1043g	gpps0667	0.97140	134.2	18:49:52.4	+10:43	42.3291	+5.2123	17.2	4.8	7.9	11.0	
J1844−0134g	gpps0668	2.69720	357.7	18:44:18.0	−01:34	30.7193	+0.8708	15.3	6.4	5.6	5.4	
J1903+1728g	gpps0669	1.71655	150.3	19:03:22.4	+17:28	49.8525	+5.3180	50.9	5.7	7.2	22.5	
J0641+0448g	gpps0670	0.02567	155.1	06:41:33.3	+04:48	207.5255	+0.0003	18.6	5.3	2.6	…	
J1933+2315g[a]	gpps0671	1.16670	216.4	19:33:39.0	+23:15	58.2981	+1.7369	1.5	7.6	8.3	3.5	
J1843−0310g	gpps0672	0.28515	1290.0	18:43:11.8	−03:10	29.1626	+0.3812	147.7	16.6	8.4	93.7	
J1825−0254g	gpps0673	0.09672	146.5	18:25:41.7	−02:54	27.3962	+4.3875	90.5	3.7	4.7	40.5	
J1822+0044g	gpps0674	0.99889	54.0	18:22:54.6	+00:44	30.3263	+6.6819	31.0	1.9	1.8	3.7	
J1931+2333g	gpps0675	0.00386	58.3	19:31:04.2	+23:33	58.2722	+2.3994	162.8	3.3	2.7	274.8	
J0517+3436g	gpps0676	1.59584	191.7	05:17:54.6	+34:36	172.0368	−1.8218	35.1	50.0	5.5	3.3	
J1922+1642g	gpps0677	0.68059	215.0	19:22:01.4	+16:42	51.2296	+1.0102	3.8	6.8	5.3	5.1	
J1944+1934g	gpps0678	3.44532	241.4	19:44:59.5	+19:34	56.3854	−2.3724	12.8	8.3	8.5	2.0	
J1823+0048g	gpps0679	0.91795	71.7	18:23:46.1	+00:48	30.4897	+6.5241	15.5	2.3	3.0	5.1	
J0642+0238g	gpps0680	0.72913	146.7	06:42:12.7	+02:38	209.5315	−0.8472	44.0	4.9	2.5	33.2	
J1831+0204g	gpps0681	0.00208	115.2	18:31:19.8	+02:04	32.4947	+5.4225	17.5	3.4	4.8	40.3	
J1850+0724g	gpps0682	0.46889	117.8	18:50:52.5	+07:24	39.4636	+3.4920	53.5	4.1	5.0	20.1	
J1915+0601g	gpps0683	0.00401	151.8	19:15:56.2	+06:01	41.0927	−2.6692	32.3	4.9	6.5	22.5	
J1924+2110g	gpps0684	0.00504	93.4	19:24:10.1	+21:10	55.4119	+2.6688	23.8	4.1	3.3	118.2	
J1943+2115g	gpps0685	1.85903	162.8	19:43:03.3	+21:15	57.6136	−1.1439	13.5	5.9	5.1	5.2	
J1828+0218g	gpps0686	0.00297	140.8	18:28:55.8	+02:18	32.4206	+6.0580	30.8	4.2	7.5	31.5	
J2101+5028g	gpps0687	0.25444	157.4	21:01:08.9	+50:28	90.3926	+2.7464	58.5	5.4	4.2	9.6	
J2258+5222g	gpps0688	1.03056	127.4	22:58:15.8	+52:22	105.9909	−6.7357	52.5	5.1	4.3	8.7	
J1943+2700g	gpps0689	2.47891	187.4	19:43:51.0	+27:00	62.7009	+1.5673	25.9	7.0	8.0	3.4	
J1836+0352g	gpps0690	0.44910	185.1	18:36:06.0	+03:52	34.6426	+5.1752	38.3	5.4	11.1	4.2	
J1945+2011g	gpps0691	0.50307	39.3	19:45:53.1	+20:11	57.0262	−2.2454	18.8	2.7	2.0	11.8	
J1955+3114g	gpps0692	0.00336	117.2	19:55:57.3	+31:14	67.6861	+1.4377	73.4	5.1	6.4	14.6	
J1834+0248g	gpps0693	0.37556	86.5	18:34:14.6	+02:48	33.4805	+5.1064	7.8	2.7	3.6	12.2	
J0541+3335g	gpps0694	0.11365	89.2	05:41:41.8	+33:35	175.5906	+1.7309	32.3	2.3	1.7	19.1	
J1917+2035g	gpps0695	0.28830	176.6	19:17:06.5	+20:35	54.1247	+3.8549	54.0	6.5	5.5	13.9	
J2029+3434g	gpps0696	1.80882	72.9	20:29:26.3	+34:34	74.3428	−2.5848	29.2	3.8	4.5	12.7	
J1851+0843g	gpps0697	0.28891	246.3	18:51:18.3	+08:43	40.6986	+3.9976	55.2	7.8	16.6	15.5	
J1850+0845g	gpps0698	0.04831	201.1	18:50:58.0	+08:45	40.6554	+4.0833	10.0	6.5	12.7	9.8	
J1850+0956g	gpps0699	0.00324	99.7	18:50:26.7	+09:56	41.6906	+4.7349	29.2	3.8	4.6	30.1	
J2027+2837g	gpps0700	0.00479	131.9	20:27:47.0	+28:37	69.2795	−5.7620	109.1	6.1	10.7	20.5	
J2017+1933g	gpps0701	0.31485	77.6	20:17:57.3	+19:33	60.4507	−9.0009	102.9	4.0	6.0	6.3	
J1913+0153g	gpps0702	0.00323	114.3	19:13:47.8	+01:53	37.1664	−4.1088	27.6	3.8	4.7	12.9	
J1854+1002g	gpps0703	0.07101	190.5	18:54:40.6	+10:02	42.2514	+3.8502	26.5	6.2	11.3	10.1	
J1854+0957g	gpps0704	0.68764	116.7	18:54:28.9	+09:57	42.1556	+3.8555	20.6	4.3	5.4	7.9	
J1854+0956g	gpps0705	0.08901	53.3	18:54:26.0	+09:56	42.1556	+3.8555	18.1	2.7	1.7	14.7	
J1850+0824g	gpps0706	1.01316	74.1	18:50:29.1	+08:24	40.3167	+4.0319	43.2	3.1	2.6	5.1	
J1846+0657g	gpps0707	2.24405	224.2	18:46:13.8	+06:57	38.5499	+4.3217	39.1	7.0	15.0	4.1	
J1917+0543g	gpps0708	0.00544	137.4	19:17:14.2	+05:43	40.9820	−3.0921	118.9	4.6	6.0	36.4	

Table A1
(Continued)

Pulsar Name*	gpps No.	Period (s)	DM[b]	R.A. (2000) (hh:mm:ss)	Decl. (2000) (±dd:mm)	GL (deg)	GB (deg)	$S_{1.25GHz}$ (μJy)	D_{NE2001} (kpc)	D_{YMW16} (kpc)	FWHM (deg)	References
J1854+0934g	gpps0709	0.20717	186.4	18:54:40.0	+09:34	41.8377	+3.6435	6.4	6.0	10.6	15.3	
J1927+1126g[a]	gpps0710	5.88928	55.2	19:27:39.0	+11:26	47.2330	−2.6865	10.5	2.9	1.9	2.6	
J1828+0157g[a]	gpps0711	1.90397	32.1	18:28:25.0	+01:57	32.0438	+6.0106	4.5	1.4	1.1	3.5	
J1905+1200g[a]	gpps0712	⋯	183.5	19:05:07.3	+12:00	45.1641	+2.4571	⋯	5.8	7.6	⋯	
J1914+1053g[a]	gpps0713	⋯	108.0	19:14:15.8	+10:53	45.2138	−0.0413	⋯	3.9	3.3	⋯	
J1913+1058g[a]	gpps0714	⋯	175.9	19:13:04.1	+10:58	45.1527	+0.2579	⋯	5.0	4.7	⋯	
J1930+1713g[a]	gpps0715	⋯	488.9	19:30:54.6	+17:13	52.6955	−0.6128	⋯	13.6	9.9	⋯	
J1859−0233g[a]	gpps0716	⋯	164.2	18:59:44.0	−02:33	31.5984	−3.0110	⋯	4.1	4.6	⋯	
J0639+0828g[a]	gpps0717	⋯	290.1	06:39:53.0	+08:28	204.0771	+1.3088	⋯	50.0	25.0	⋯	
J2102+5047g	gpps0718	0.35820	337.2	21:02:10.0	+50:47	90.7373	+2.8340	22.0	50.0	9.4	5.7	
J1918+0523g[a]	gpps0719	3.65720	102.0	19:18:37.4	+05:23	40.8356	−3.5584	13.4	3.8	4.3	6.3	
J1942+2604g[a]	gpps0720	2.64191	161.0	19:42:33.1	+26:04	61.7469	+1.3555	2.3	6.1	7.7	1.8	
J1904+0100g[a]	gpps0721	1.30879	146.3	19:04:07.6	+01:00	35.2765	−2.3627	3.6	2.8	4.6	3.5	
J1911+1525g[a]	gpps0722	3.28249	299.8	19:11:36.9	+15:25	48.9307	+2.6266	7.3	9.6	10.8	4.2	
J2129+4106g[a]	gpps0723	3.26074	73.5	21:29:09.3	+41:06	87.0110	−7.2442	2.9	3.7	4.0	4.2	
J1951+2329g[a]	gpps0724	1.82610	260.0	19:51:01.4	+23:29	60.4749	−1.6097	2.5	8.6	9.1	2.1	
J1913+0400g[a]	gpps0725	0.39053	125.4	19:13:59.9	+04:00	39.0738	−3.1773	0.26	4.2	5.1	26.7	
J1914+0219g[a]	gpps0726	2.01819	161.4	19:14:53.5	+02:19	37.6798	−4.1516	0.18	5.1	7.5	1.4	
J2044+3843g[a]	gpps0727	⋯	230.0	20:44:31.2	+38:43	79.479	−2.4993	⋯	8.3	8.0	⋯	
J1906+0310g[a]	gpps0728	⋯	307.5	19:06:20.0	+03:10	37.4576	−1.8601	⋯	6.9	9.2	⋯	
J1830−0231g[a]	gpps0729	⋯	150.7	18:30:20.0	−02:31	28.2751	+3.5377	⋯	3.7	4.4	⋯	
J1836−0011g[a]	gpps0730	0.93960	237.5	18:36:09.5	−00:11	31.0124	+3.3091	3.4	5.6	7.3	5.6	
J1843−0147g[a]	gpps0731	⋯	531.0	18:43:30.0	−01:47	30.4325	+0.9483	⋯	8.1	7.9	⋯	
J2117+4622g	gpps0732	0.00495	193.6	21:17:23.6	+46:22	89.2135	−2.0153	21.5	6.5	4.8	34.6	
J1940+1754g	gpps0733	0.00244	193.0	19:40:57.4	+17:54	54.4584	−2.3721	36.9	6.7	4.8	46.6	
J1853−0014g	gpps0734	0.56327	70.5	18:53:23.0	−00:14	32.9354	−0.5447	3.9	2.5	2.1	11.5	
J1847−0308g[a]	gpps0735	29.7693	149.8	18:47:02.2	−03:08	29.6312	−0.4558	20.7	4.2	4.8	1.5	
J2016+3318g	gpps0736	2.17835	382.3	20:16:45.5	+33:18	71.7908	−1.1577	18.5	13.7	17.8	8.6	
J1945+2716g	gpps0737	2.39803	94.9	19:45:52.4	+27:16	63.1579	+1.3113	19.2	4.4	5.9	4.4	
J1855−0149g	gpps0738	0.00456	349.9	18:55:08.4	−01:49	31.7354	−1.6523	19.3	7.2	6.3	171.8	
J1856+1059g	gpps0739	0.31138	145.9	18:56:02.6	+10:59	43.2567	+3.9820	5.4	5.1	7.8	8.0	
J1915+0353g	gpps0740	0.05164	103.0	19:15:05.8	+03:53	39.0981	−3.4735	4.5	3.7	4.2	8.3	
J1915+0411g	gpps0741	0.72400	233.9	19:15:32.0	+04:11	39.4158	−3.4311	24.3	7.0	12.8	15.5	
J1831+0222g	gpps0742	2.31514	160.0	18:31:45.3	+02:22	32.8121	+5.4646	35.2	4.7	8.4	4.4	
J2128+5004g	gpps0743	0.20155	55.0	21:28:51.9	+50:04	93.1758	−0.7201	5.7	2.8	2.7	15.6	
J1851+0037g	gpps0744	2.52373	424.0	18:51:44.4	+00:37	33.5263	+0.2197	6.3	7.0	5.2	9.4	
J1831+0304g	gpps0745	0.83712	158.9	18:31:23.0	+03:04	33.3826	+5.8580	13.3	4.8	9.4	3.3	
J0526+3158g	gpps0746	0.02300	155.0	05:26:03.9	+31:58	175.1636	−1.9056	15.6	5.1	3.2	14.3	
J1902+1234g	gpps0747	0.47417	179.9	19:02:49.1	+12:34	45.4185	+3.2198	28.9	6.0	8.3	13.2	
J2041+3934g	gpps0748	0.37995	410.0	20:41:11.0	+39:34	79.7446	−1.4698	85.0	50.0	25.0	55.9	(J)
J1822+0207g	gpps0749	0.00990	145.3	18:22:00.5	+02:07	31.4639	+7.5144	98.3	4.5	10.7	46.7	
J2045+4431g	gpps0750	0.14183	432.4	20:45:25.2	+44:31	84.1261	+0.9745	20.4	50.0	12.8	43.4	
J1945+2706g	gpps0751	0.81915	213.1	19:45:52.3	+27:06	63.0145	+1.2286	5.5	7.5	8.1	4.9	

Note. See http://zmtt.bao.ac.cn/GPPS/ for updates. "g" indicates the temporary nature of pulsar names, due to position uncertainty of about 1′.5.
[a] discovered via single pulse search module; [b]in unites of pc cm^{-3}; References (1): Han et al. (2021); (2): Zhou et al. (2023b); (3): parameters updated by Zhi et al. (2024); (J): Jing et al. (2024).

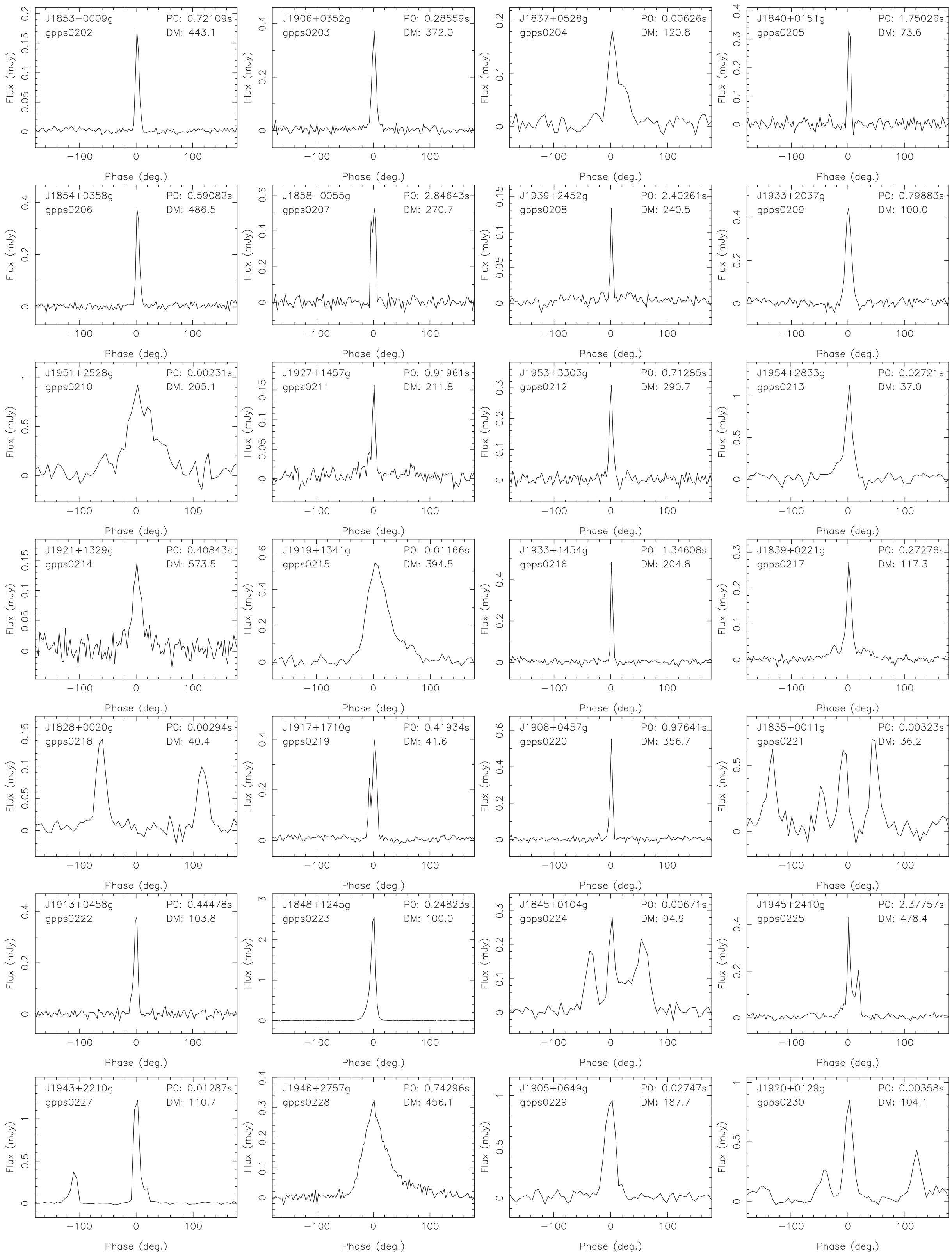


Figure A1. Integrated profiles of newly discovered pulsars, scaled to the peak and plotted in rotation phase of 360° for a full period. The pulsar name, gpps number, period and DM are noted in each panel. RRATs are not here.

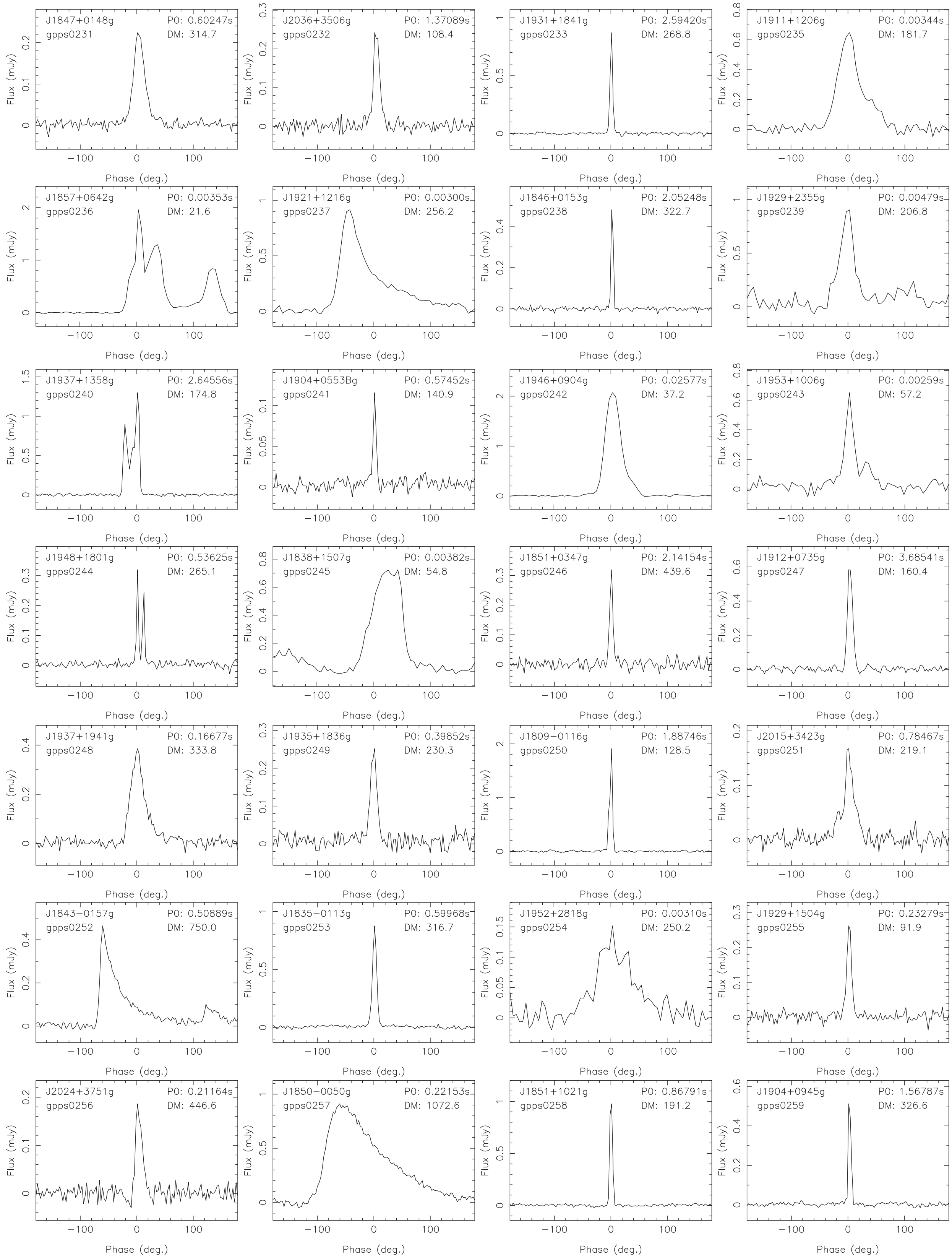


Figure A1. (Continued.)

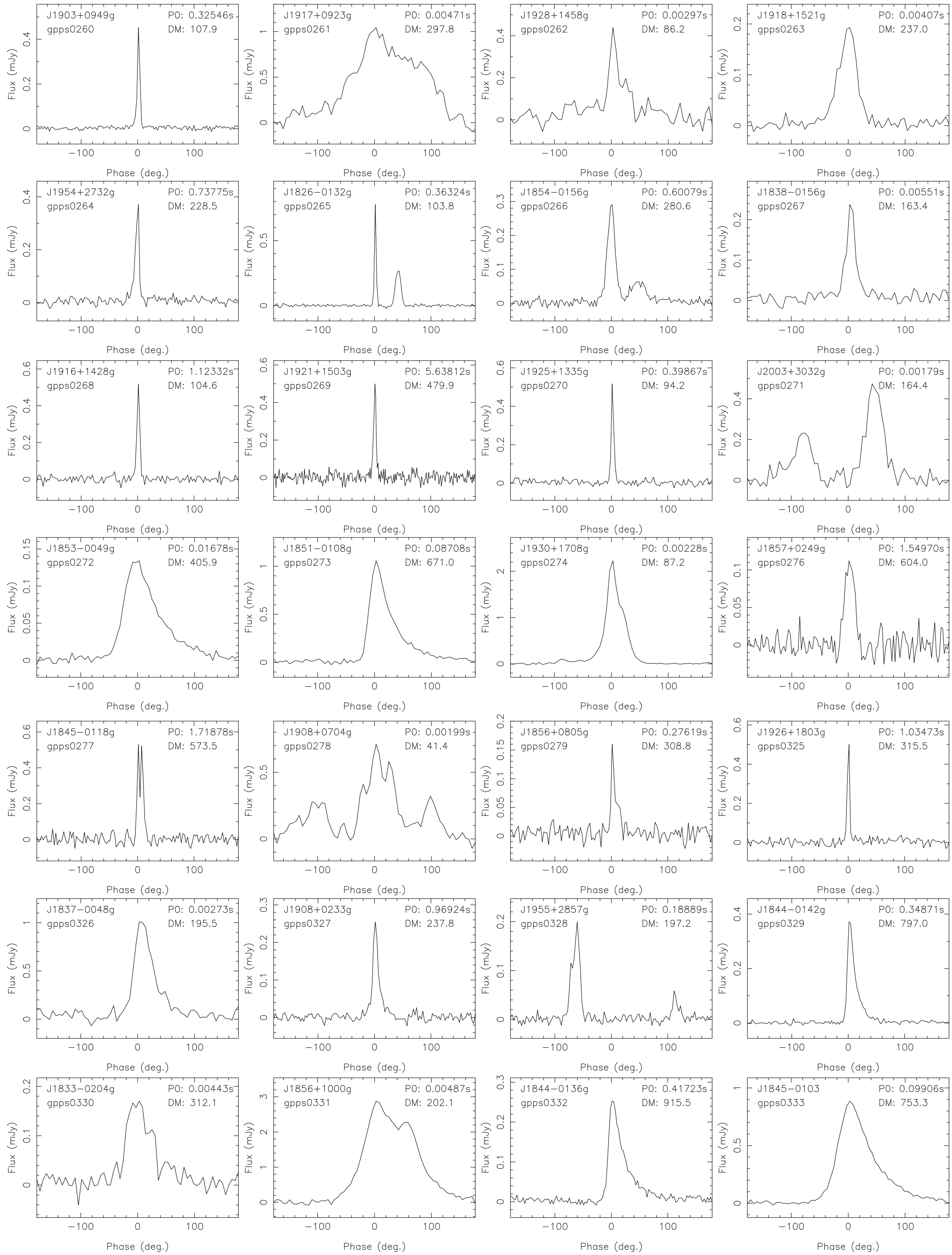


Figure A1. (Continued.)

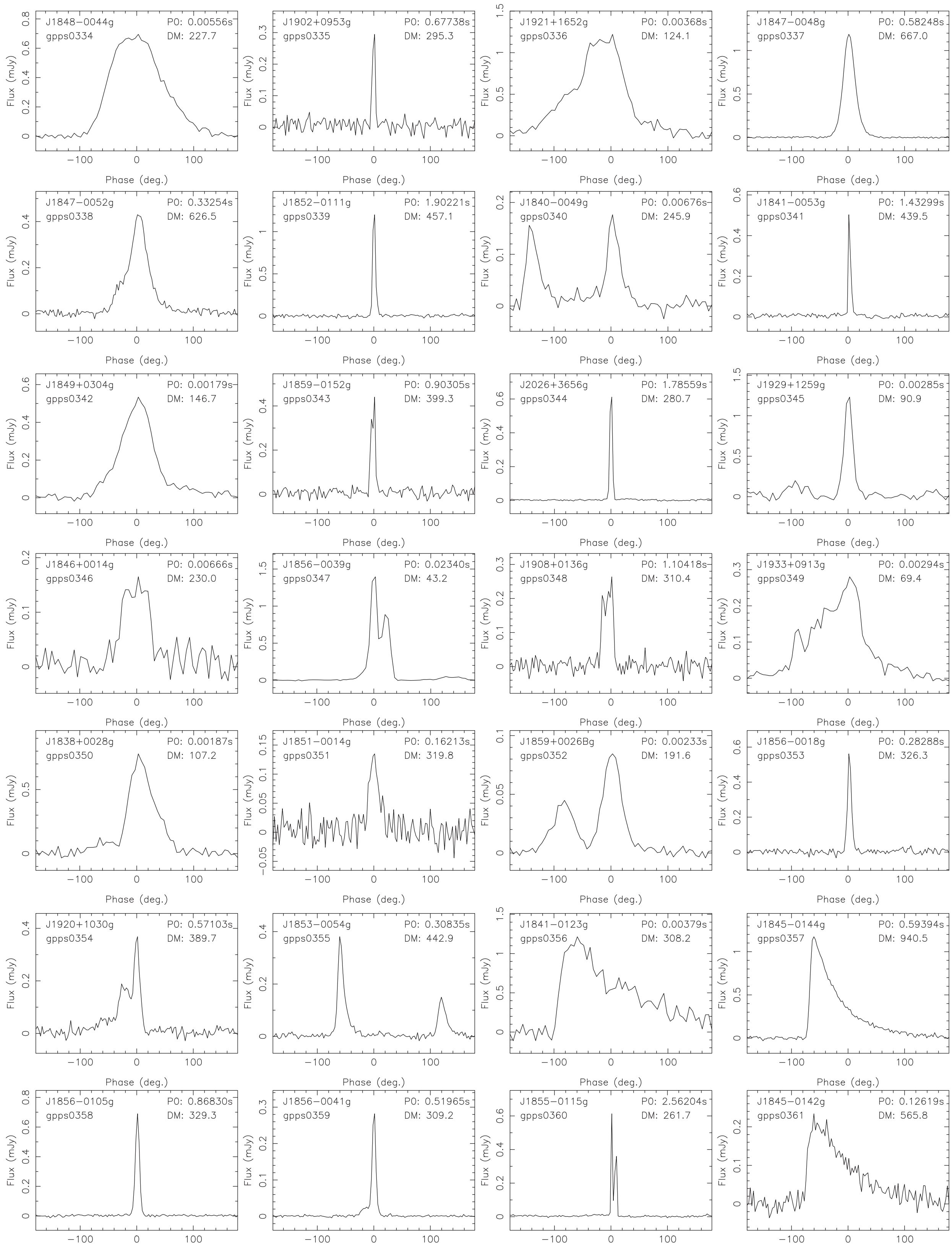


Figure A1. (Continued.)

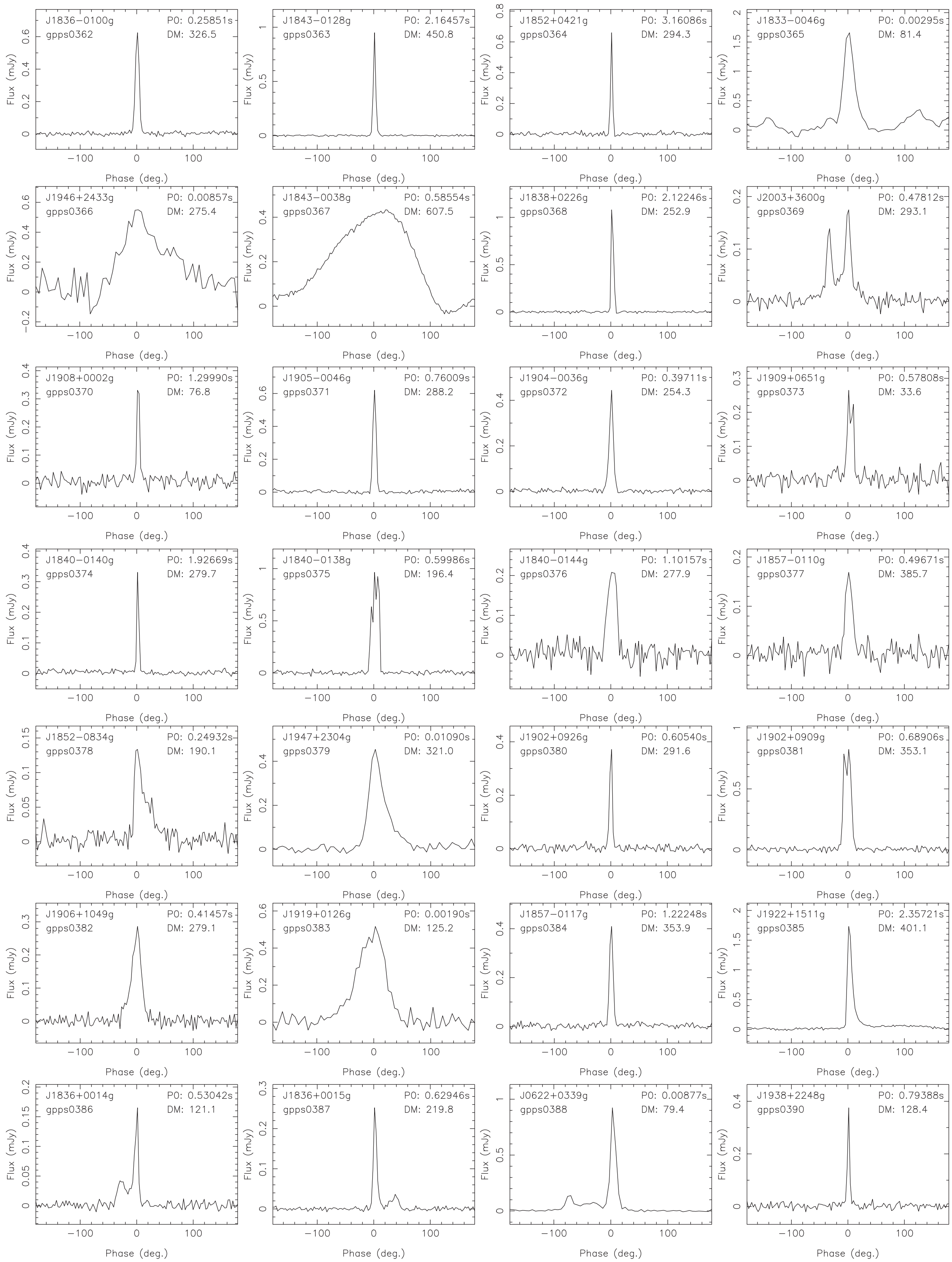


Figure A1. (Continued.)

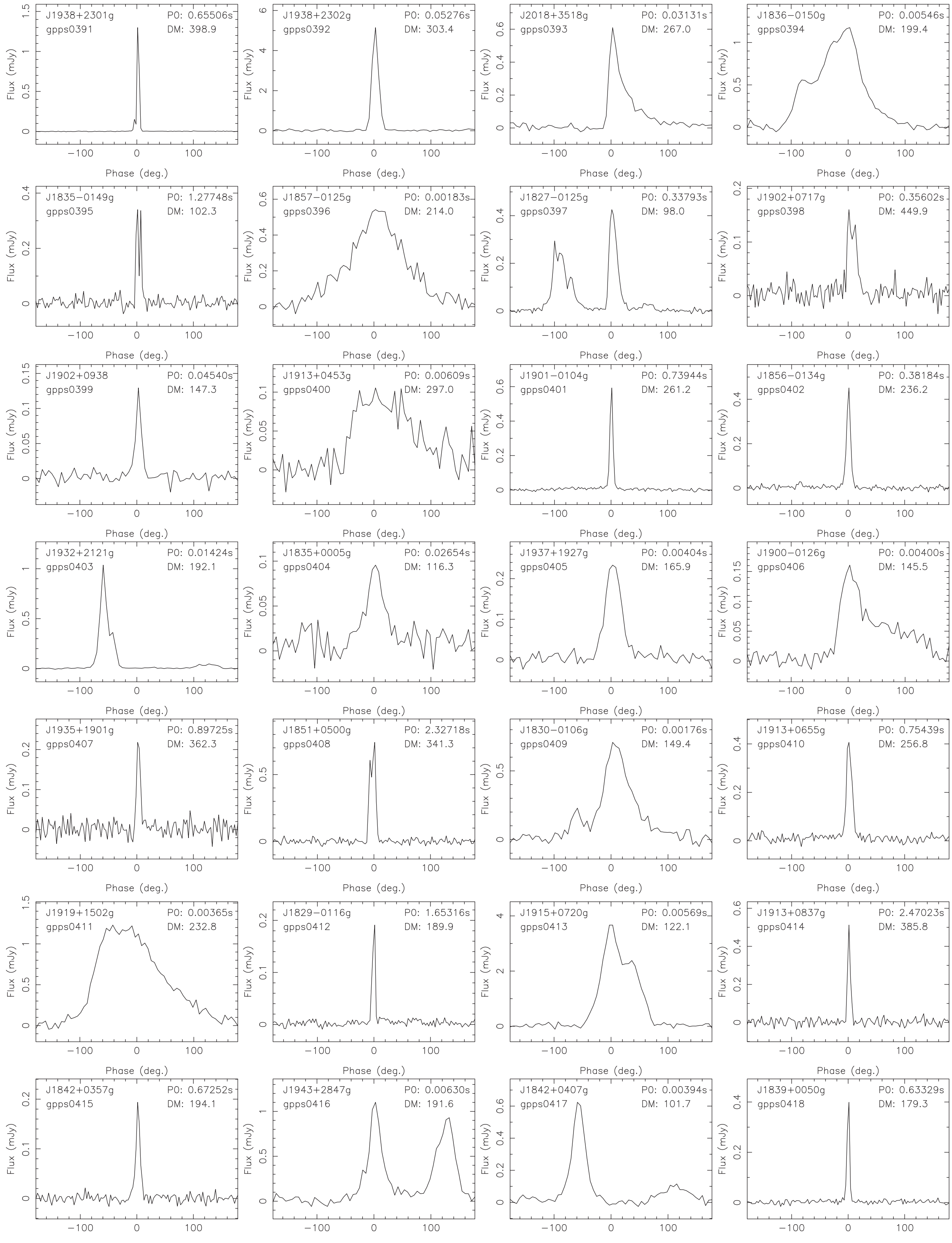


Figure A1. (Continued.)

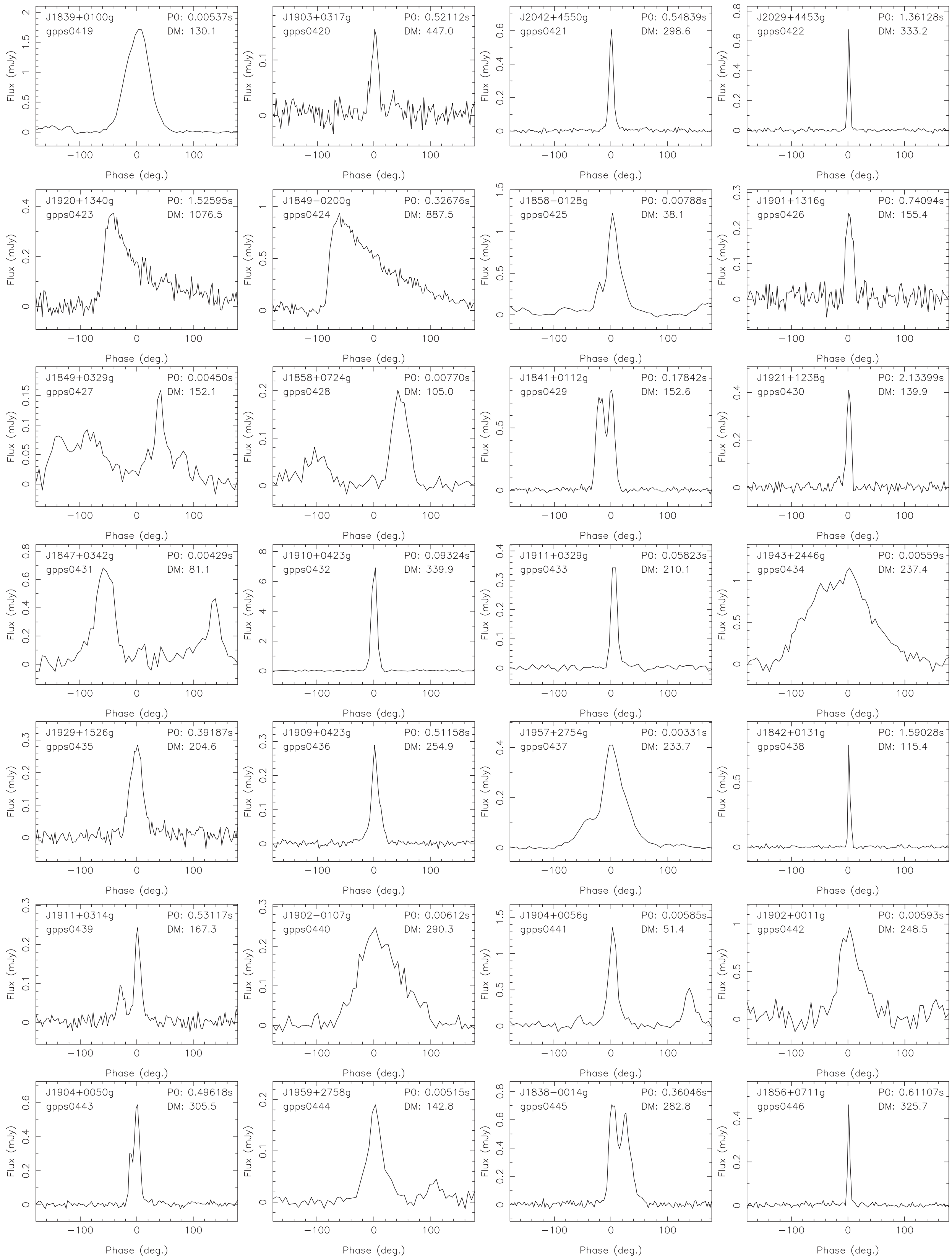


Figure A1. (Continued.)

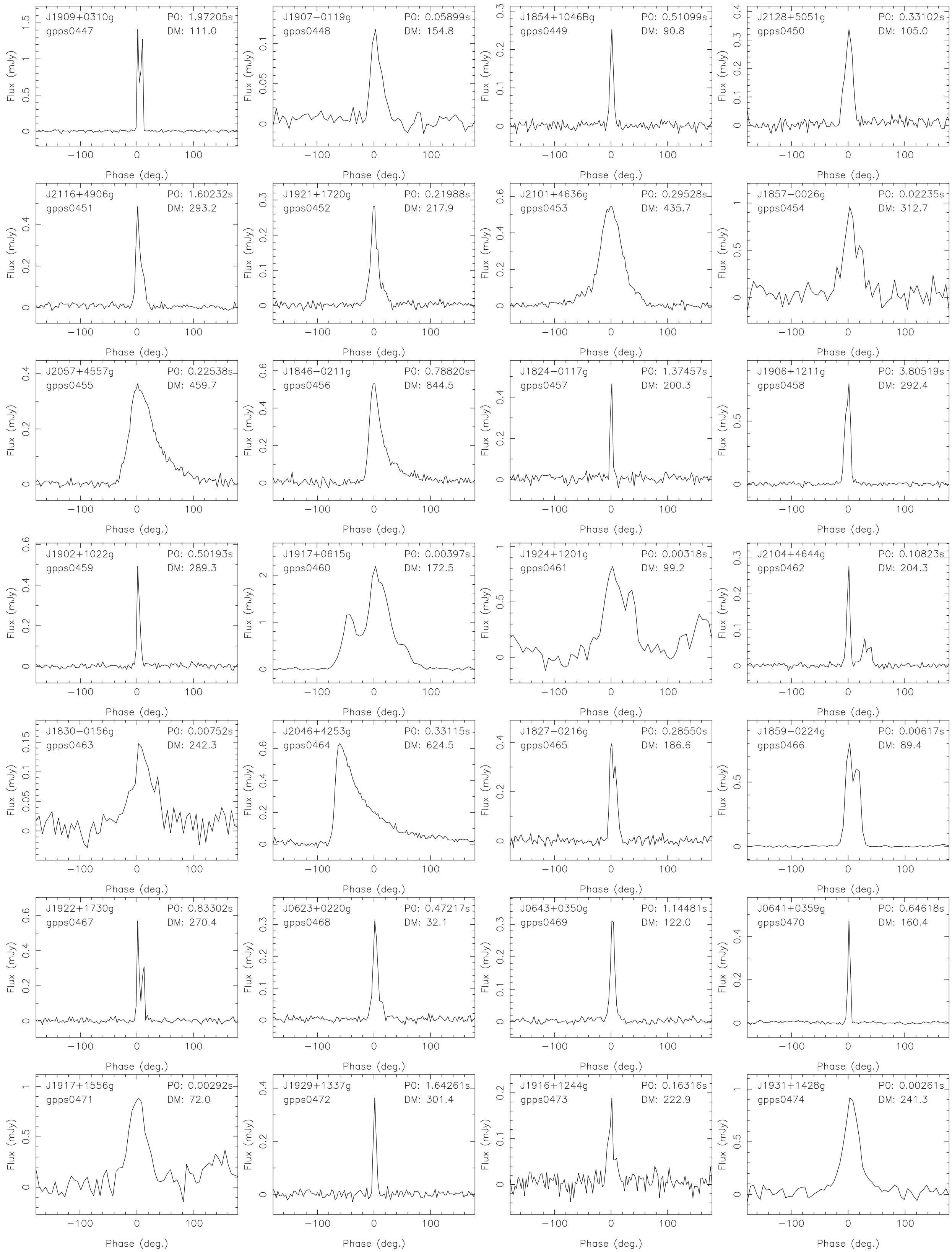


Figure A1. (Continued.)

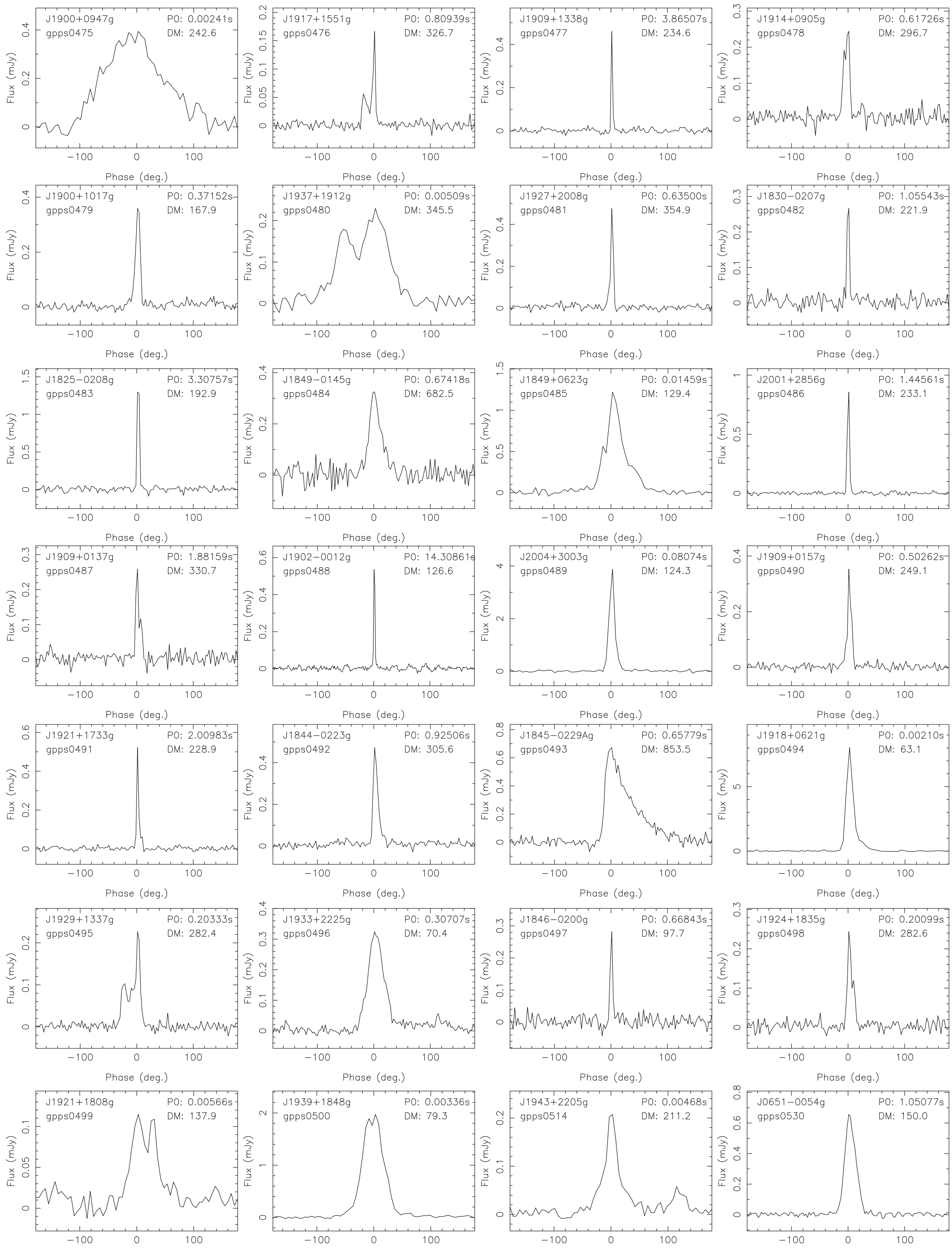


Figure A1. (Continued.)

Figure A1. (Continued.)

Figure A1. (Continued.)

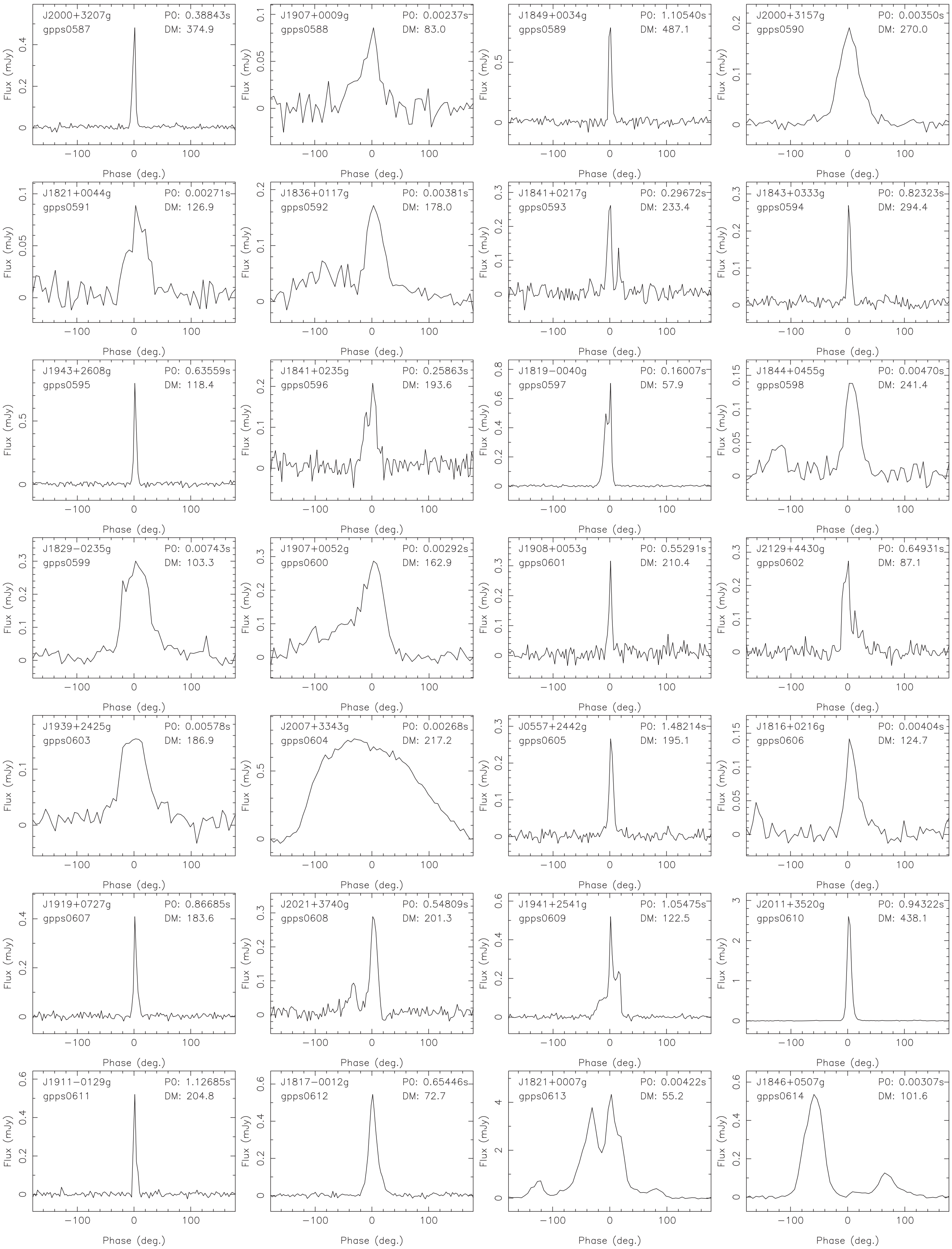


Figure A1. (Continued.)

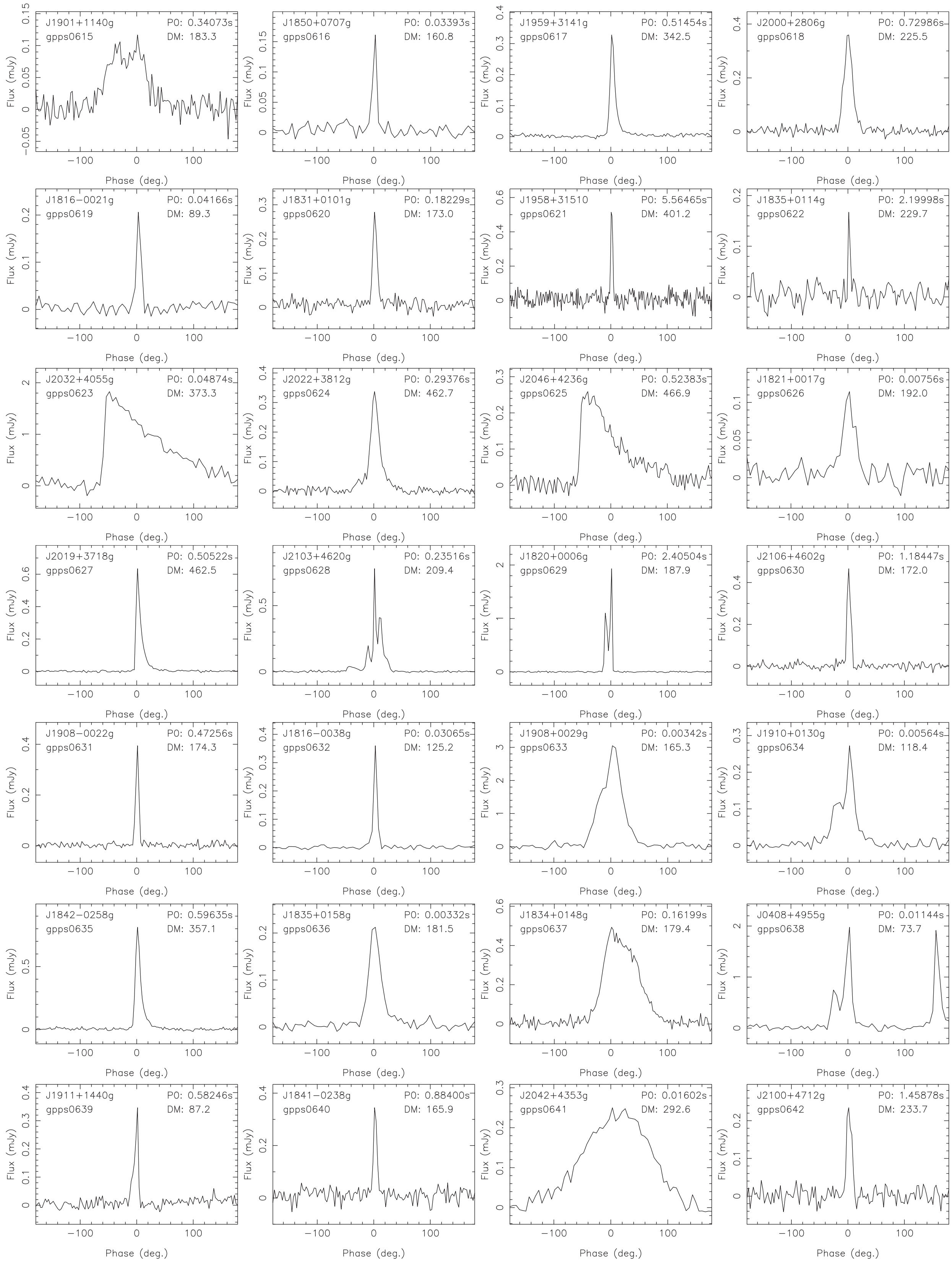


Figure A1. (Continued.)

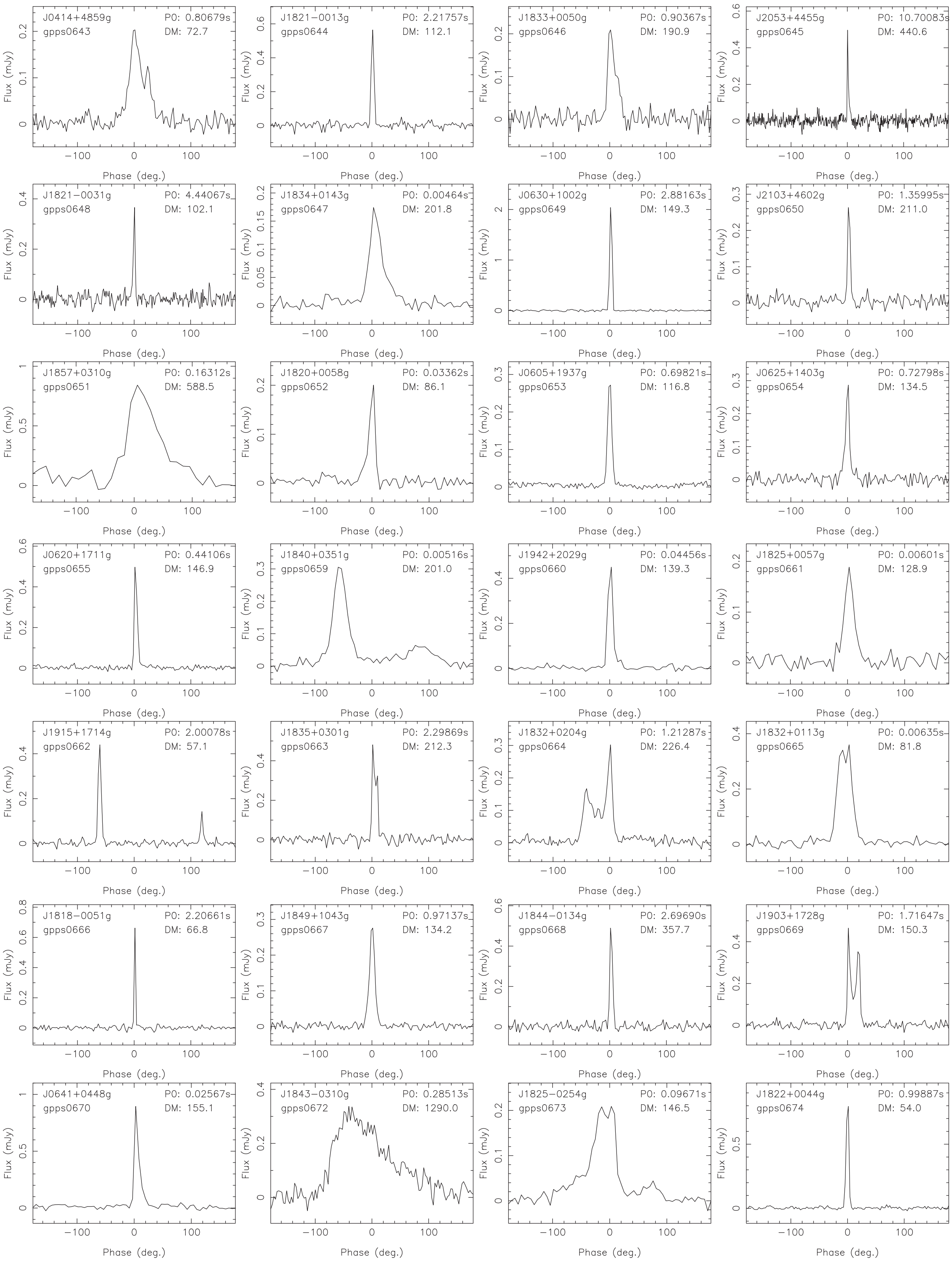


Figure A1. (Continued.)

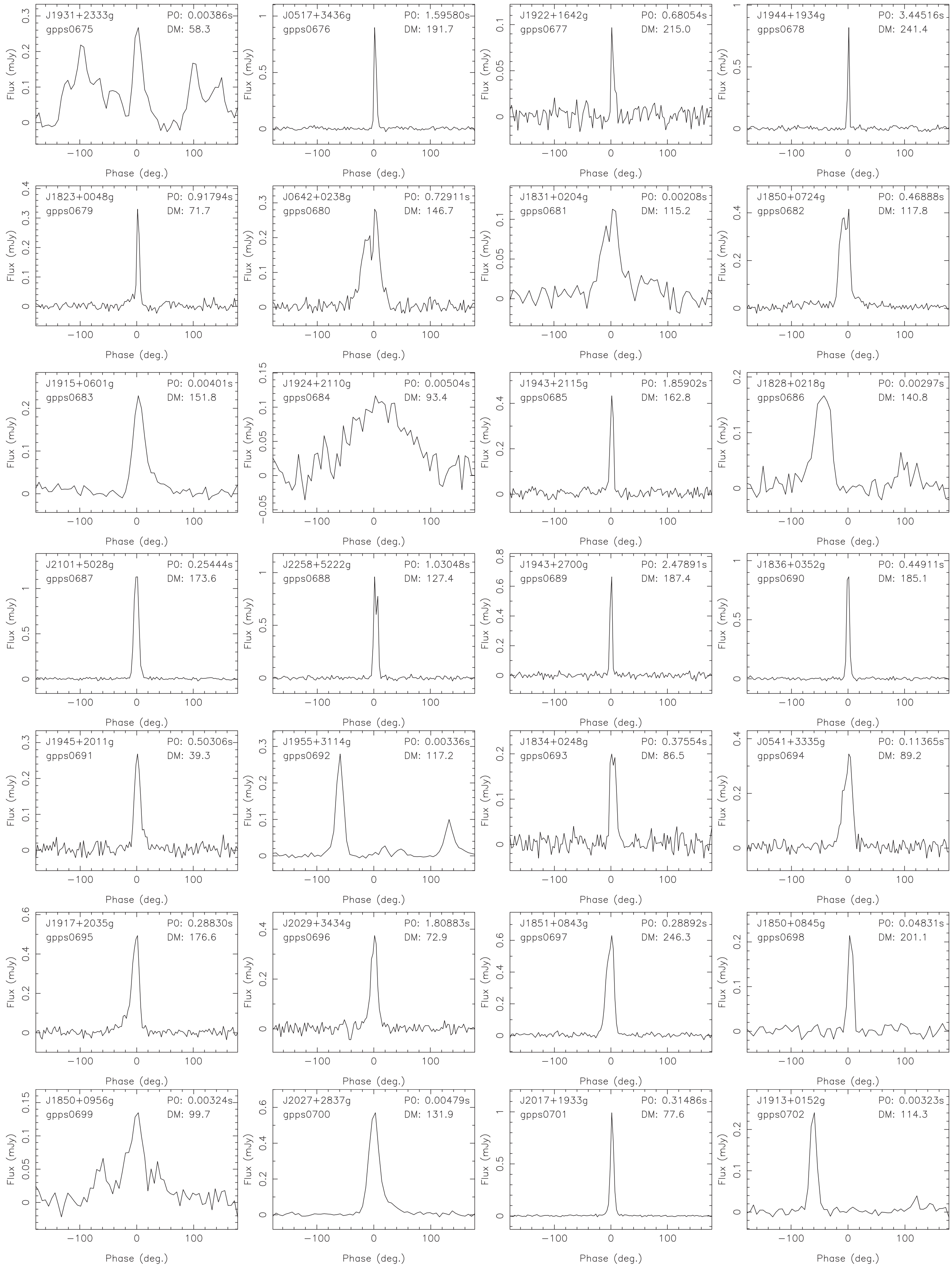
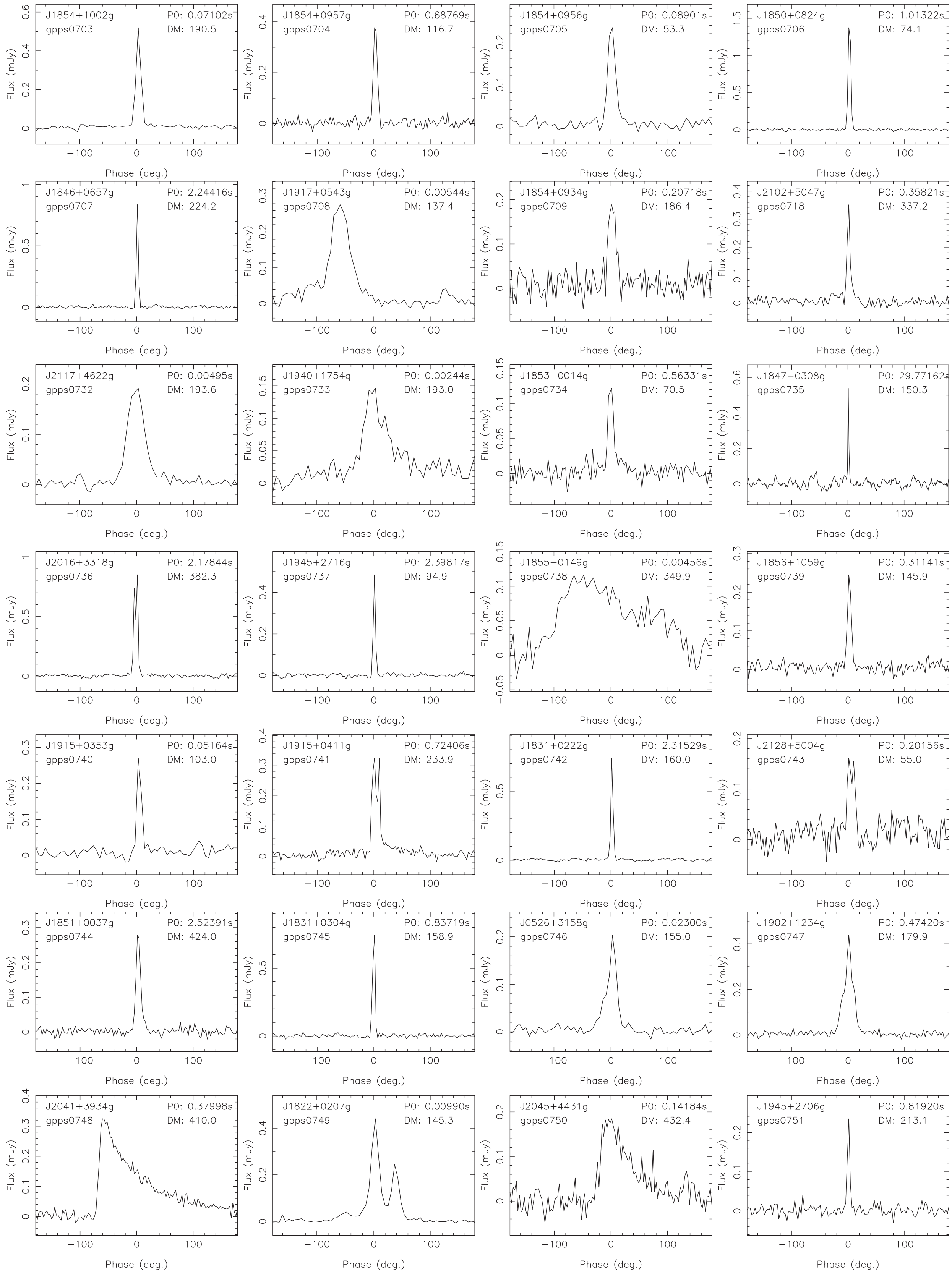


Figure A1. (Continued.)



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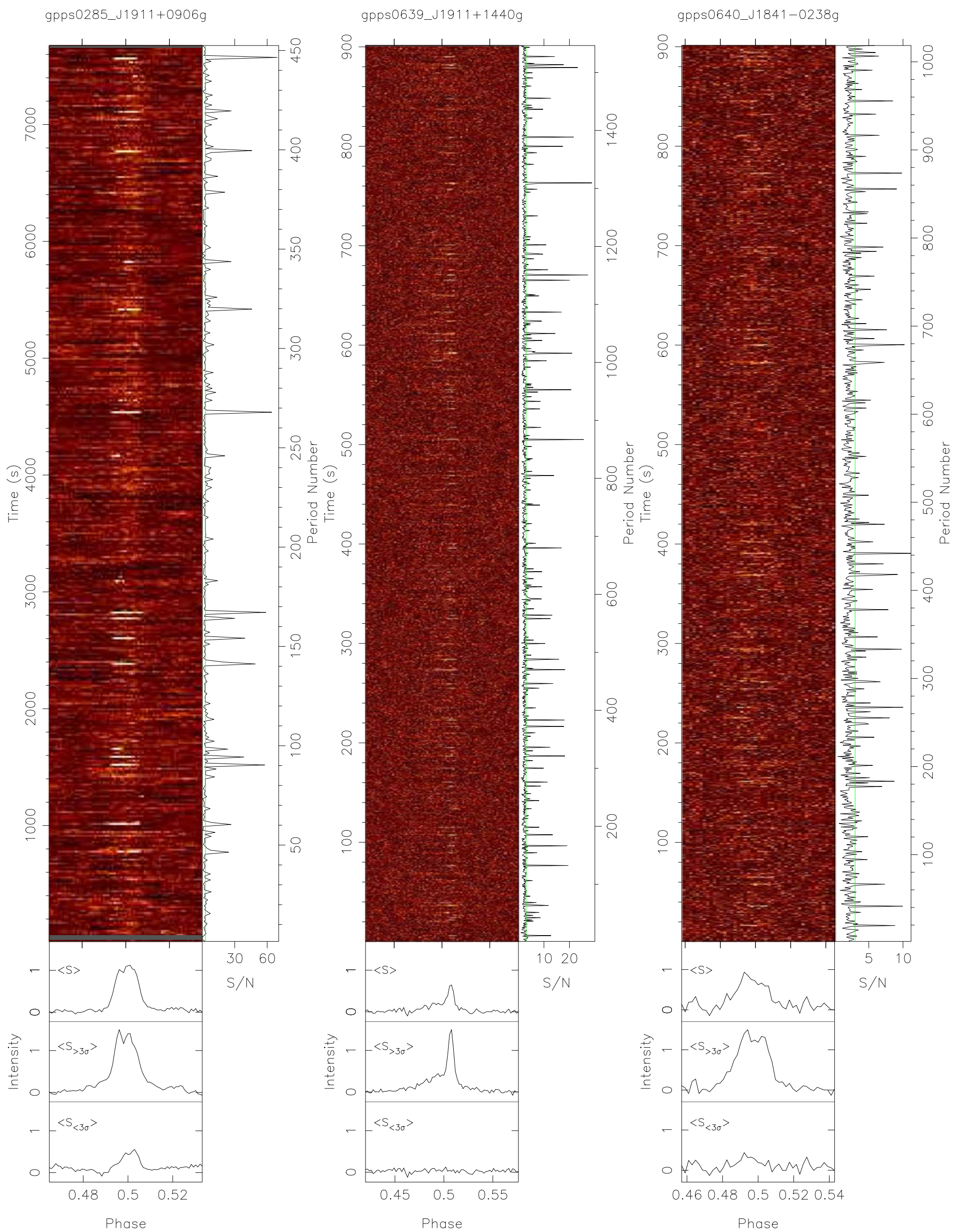

Figure A2. The pulse-stacks of 20 RRATs newly discovered in the GPPS survey. Pulse-stack is shown in the main left panel, where only a few pulses are occasionally emitted. The right panel displays the curve of S/N over pulse number, with an indication of 3σ, here the sigma is calculated from a given width of the off-pulse phase range. Three subpanels below the main panel are the averaged profiles of all periods and of single pulses with the S/N >3 and <3.

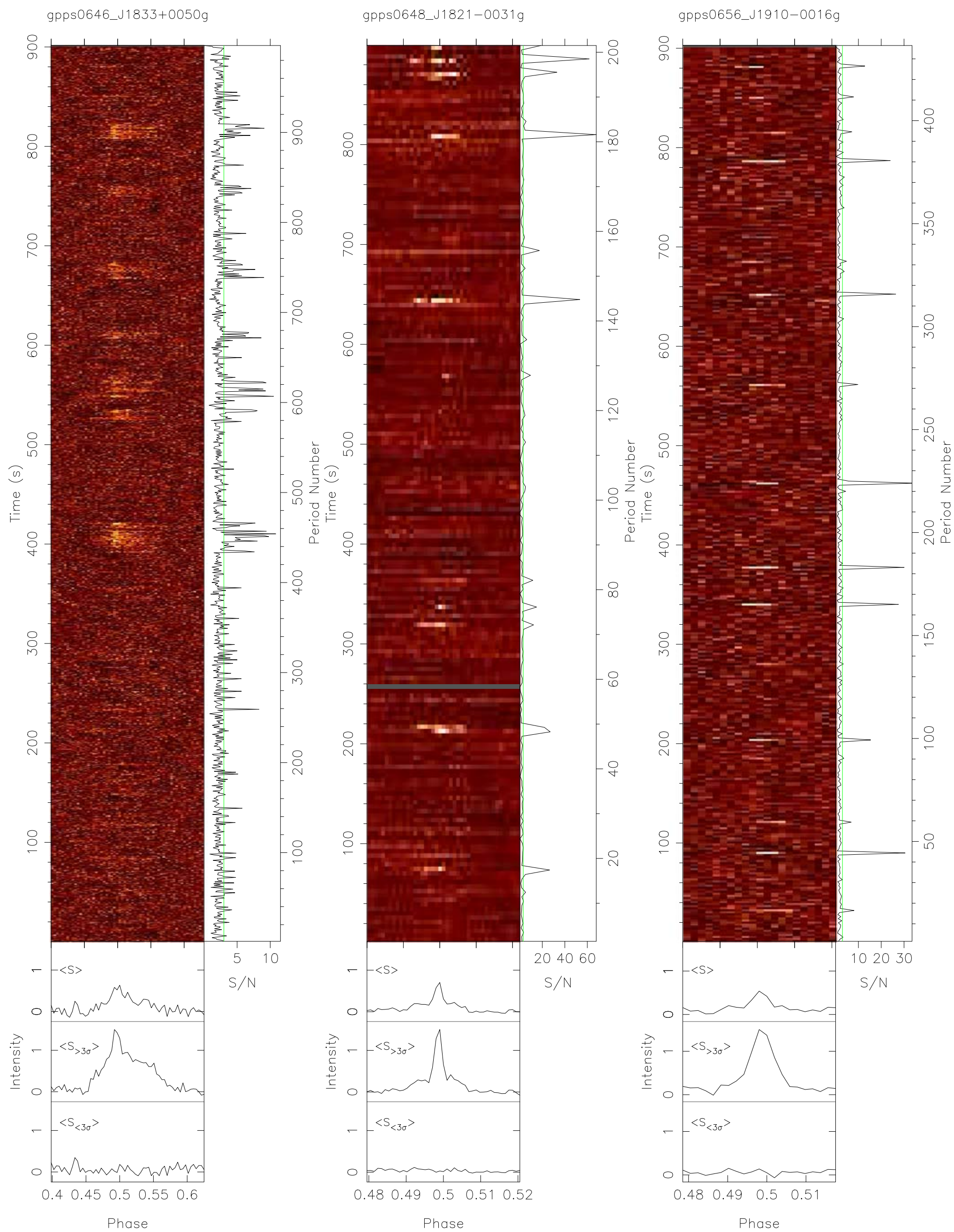

Figure A2. (Continued.)

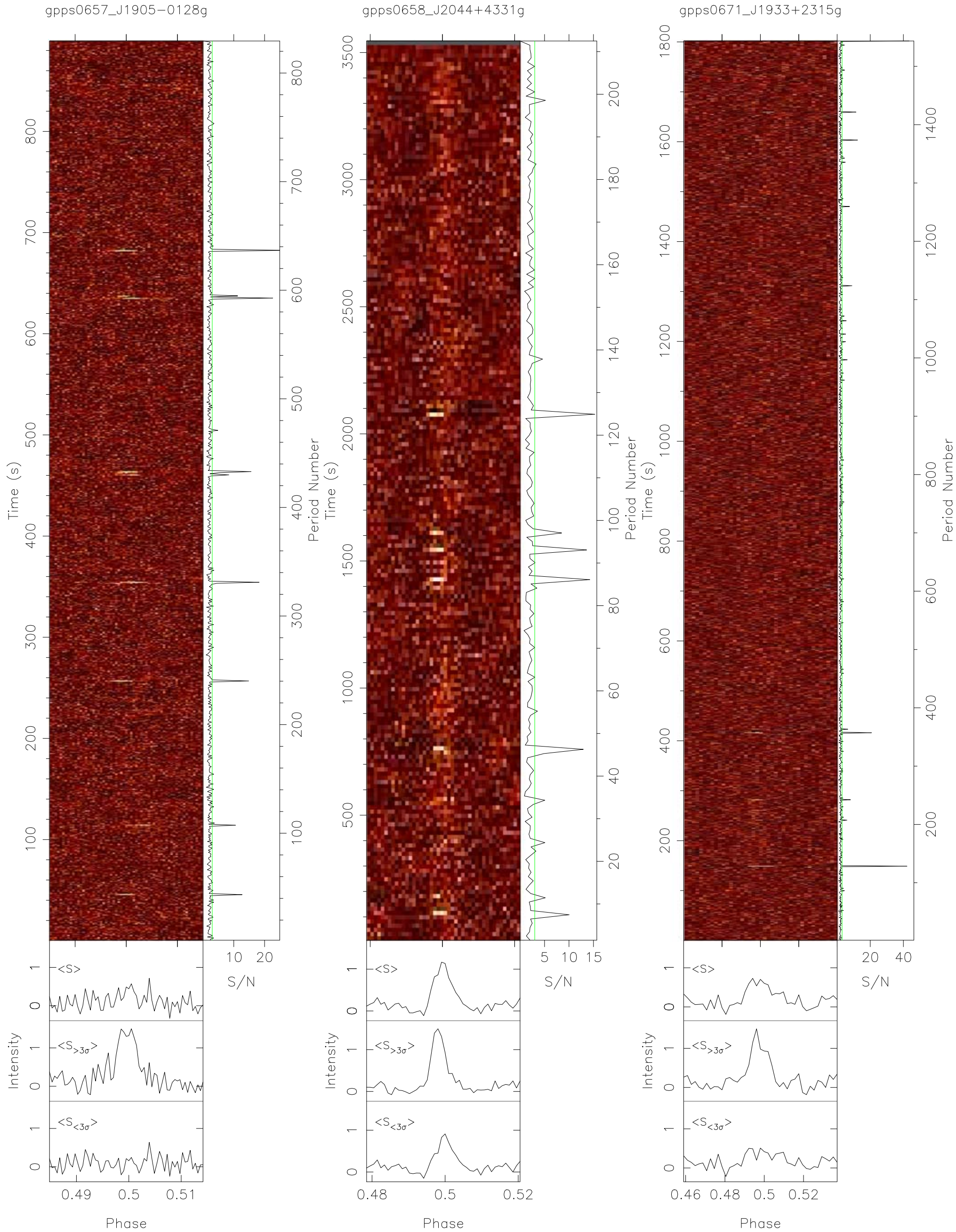

Figure A2. (Continued.)

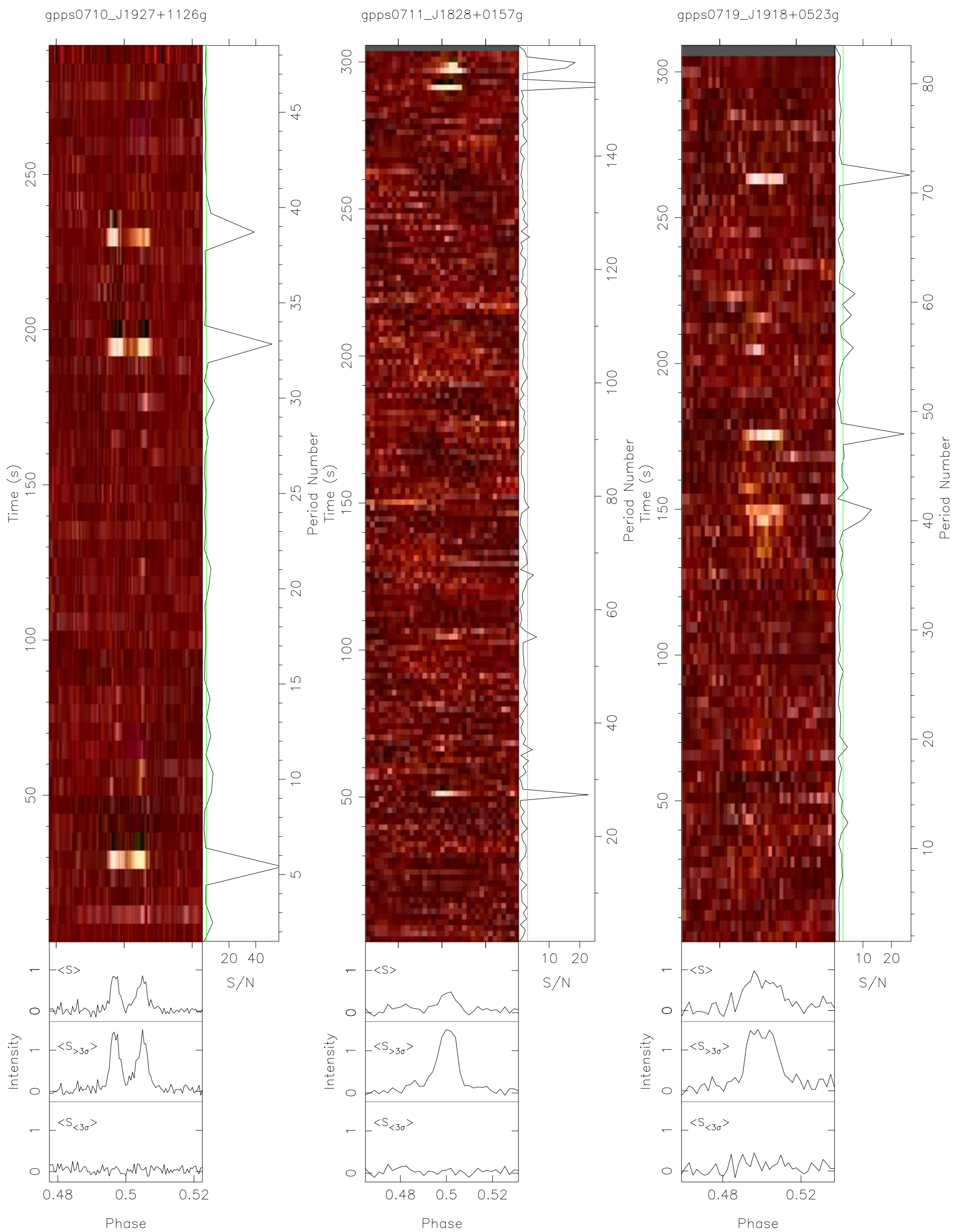

Figure A2. (Continued.)

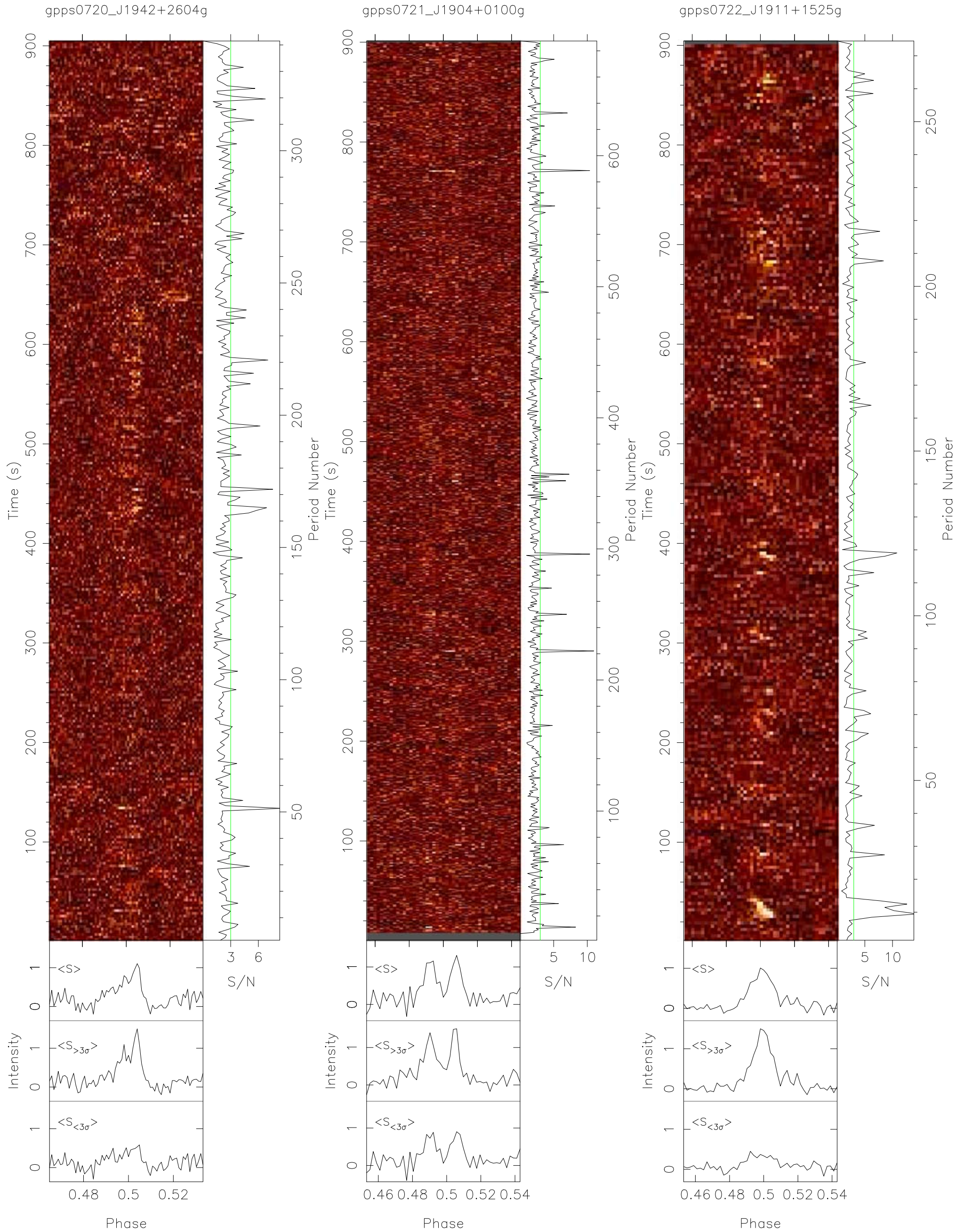

Figure A2. (Continued.)

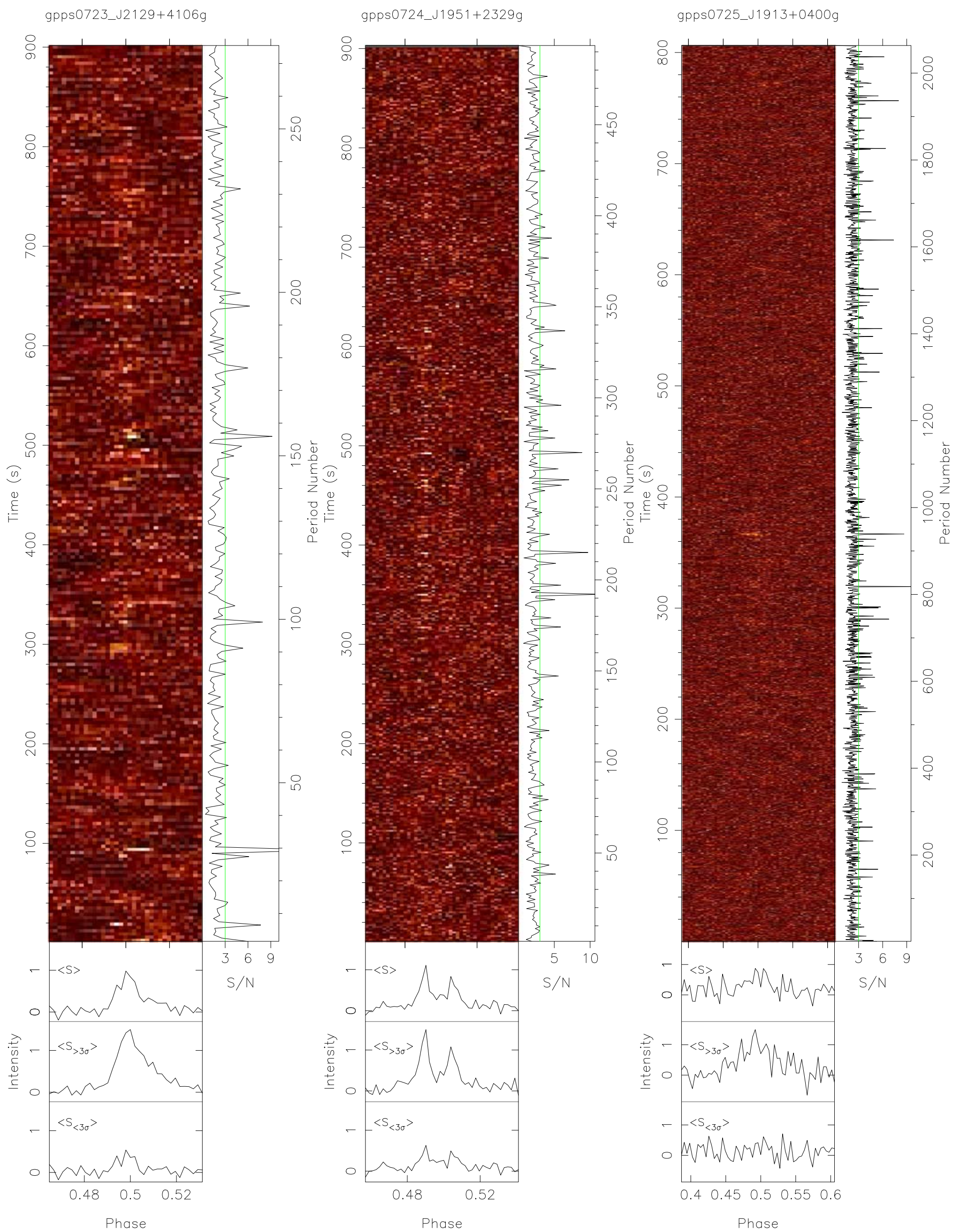

Figure A2. (Continued.)

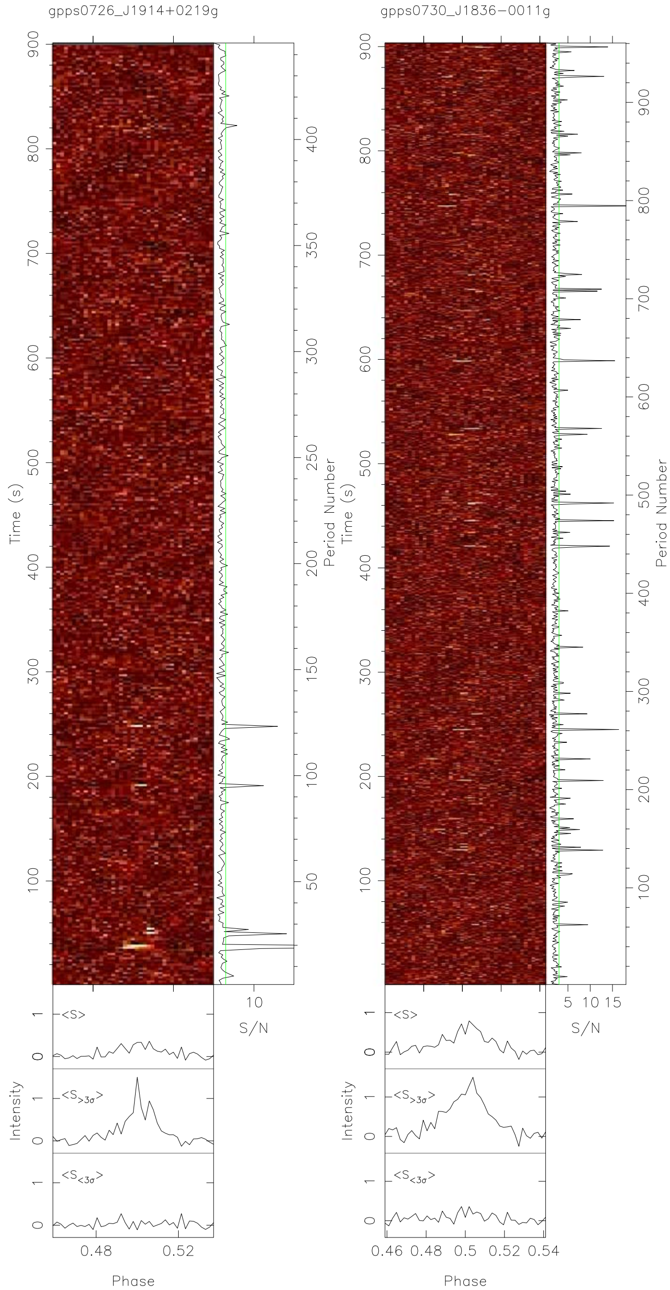

Figure A2. (Continued.)

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