Status on CT1 pulsar analysis with Gammapy

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Pulsars in the DC1

Number of observations in the DC1 for the 12 pulsars

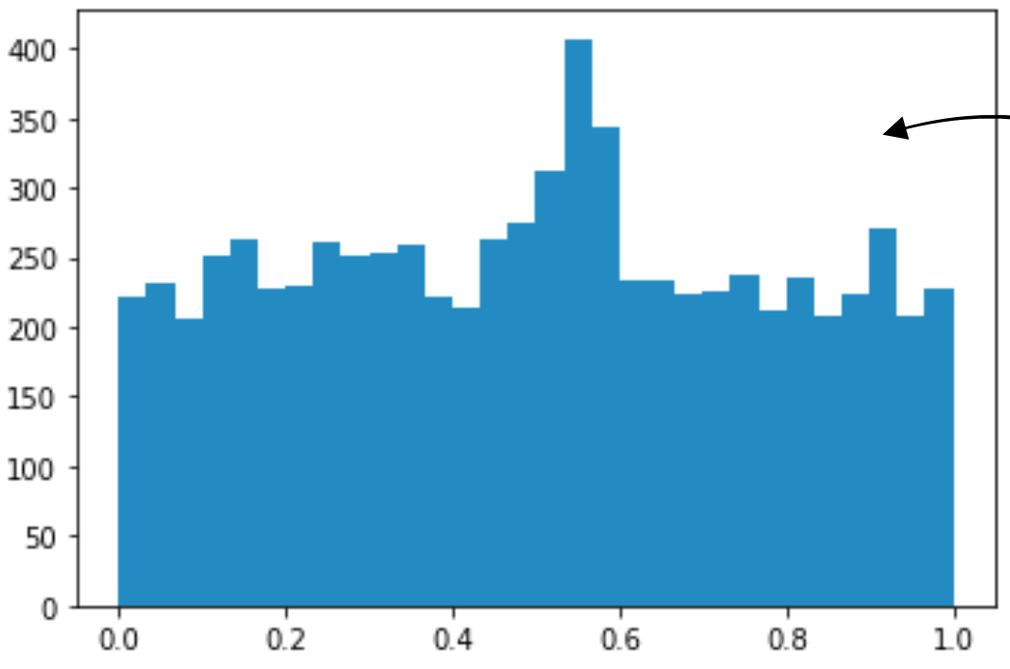
	Offset max 1°	Offset max 2°	Offset max 3°	Offset max 4°	Offset max 5°
Crab	0	0	0	0	14
Vela	0	9	18	27	45
Geminga	0	0	0	14	14
PSR J0007+7303	0	0	0	0	0
PSR J0614-3329	0	0	0	0	0
PSR J1028-5819	9	9	27	45	63
PSR J1048-5832	0	18	27	45	54
PSR J1413-6205	19	19	76	95	114
PSR J1836+5925	0	0	0	0	0
PSR J2021+3651	0	30	45	75	105
PSR J2229+6114	0	15	15	45	75
PSR J1809-2332	0	38	38	57	133

Computing the phases

- No phase column in the DC1
- Very simple model for the pulsations
  - ➡ Unrealistic (position of observatory not taken into account)
  - ➡ Very easy to compute the phases

$$\phi(t) = \phi_0 + f(t - t0) + \frac{1}{2}\dot{f}(t - t0)^2 + \frac{1}{6}\ddot{f}(t - t0)^3$$

- Crosschecked with ctphase from Ctools



Vela phasogram for all observations with an offset < 2 deg and with an angular cut of 0.2 deg

Status on the analysis

- The parameters for the DC1 pulsars are in model_galactic_pulsars.xml
  - ➡ The positions aren't quite correct (for instance the Crab, which is at 83.6332, 22.0144 is modeled at 83.6372, 22.0241 in ra, dec [deg])
  - ➡ The power laws are not the right ones

- No phasing package was used (PINT in python, Tempo2 in C) for the DC1
- In order to have a fully pythonic pipeline, PINT will have to be included at some point
- New « pulsar » folder with a first notebook on how to make phases for the DC1 : https://github.com/gammasky/cta-analyses/tree/master/pulsar
- On-going spectral analysis

Thank you ! More pulsar analysis at 2 pm

https://github.com/gammapy/gammapy-meetings/tree/master/2018-03-16_pulsar
https://github.com/gammasky/cta-analyses/tree/master/pulsar