

Discussion GRB, Rubin et FINK

Simulation de courbes de lumière d'afterglows



**SORBONNE
UNIVERSITÉ**

Ducoin Jean-Grégoire
Frédéric Daigne

05/04/22

Boulodrome pipeline

The screenshot shows the GitHub interface for the repository 'cpellouin / boulodrome'. At the top, there is a navigation bar with 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. Below this, the repository name is shown with 'Private' status. On the right, there are buttons for 'Watch 1', 'Fork 1', and 'Star 0'. A secondary navigation bar includes 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Security', and 'Insights'. The main content area features a file browser for the 'main' branch, showing a list of files and their commit history. The 'About' section on the right indicates no description, website, or topics are provided, and shows 0 stars, 1 watcher, and 1 fork. The 'Releases' section states no releases are published, and the 'Packages' section states no packages are published. The 'Languages' section shows that Python is 100% of the code.

Search or jump to... [Pull requests](#) [Issues](#) [Marketplace](#) [Explore](#) 🔔 + 🌐

[cpellouin / boulodrome](#) Private 👁️ Watch 1 🍴 Fork 1 ☆ Star 0

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Security](#) [Insights](#)

[main](#) 🌿 2 branches 🏷️ 0 tags [Go to file](#) [Add file](#) [Code](#)

File	Commit Message	Time
.DS_Store	Merged integration at nu and in band, renamed files	last month
README.md	Initial commit	5 months ago
data_170817.py	file handling and launching script added	2 months ago
data_plotting.py	Merged integration at nu and in band, renamed files	last month
double_jet.py	Initial commit (boulodrome v.1.0)	5 months ago
dyn_rad_shock.py	Merged integration at nu and in band, renamed files	last month
dynamics.py	Added IC (Boulodrome v2.0)	3 months ago
geometry.py	file handling and launching script added	2 months ago
gw170817_afterglow_data_full.txt	Added IC (Boulodrome v2.0)	3 months ago
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klein_nishina.py	Added IC (Boulodrome v2.0)	3 months ago

About
No description, website, or topics provided.

- [Readme](#)
- ☆ 0 stars
- 👁️ 1 watching
- 🍴 1 fork

Releases
No releases published
[Create a new release](#)

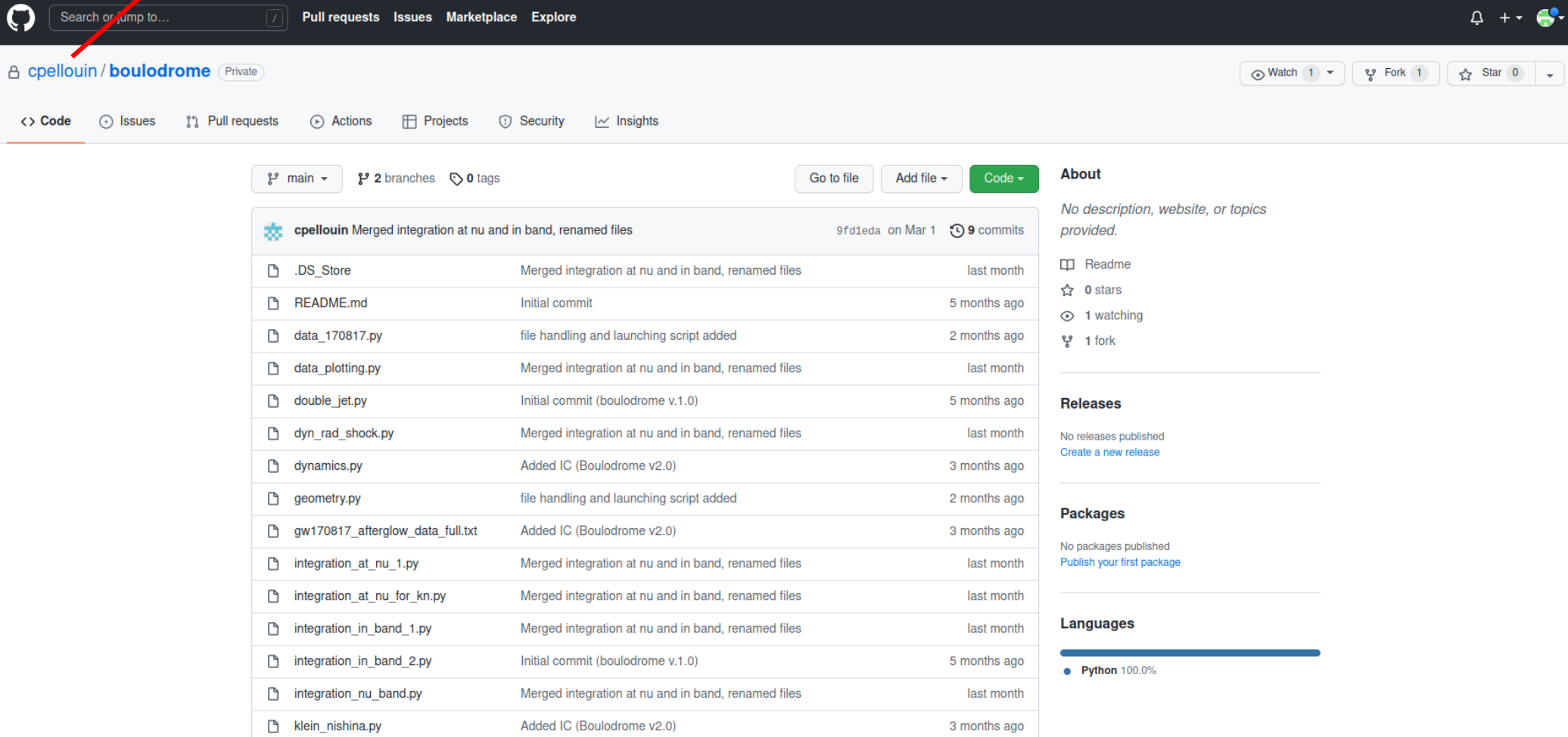
Packages
No packages published
[Publish your first package](#)

Languages

- Python 100.0%

Boulodrome pipeline

Clément Pellouin



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Search or jump to... Pull requests Issues Marketplace Explore

cpellouin / boulodrome Private Watch 1 Fork 1 Star 0

<> Code Issues Pull requests Actions Projects Security Insights

main 2 branches 0 tags Go to file Add file Code

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Boulodrome pipeline

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Python

Boulodrome pipeline

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Simulate afterglow with synchrotron emission + inverse Compton
At any wavelength/band (X-ray to radio)

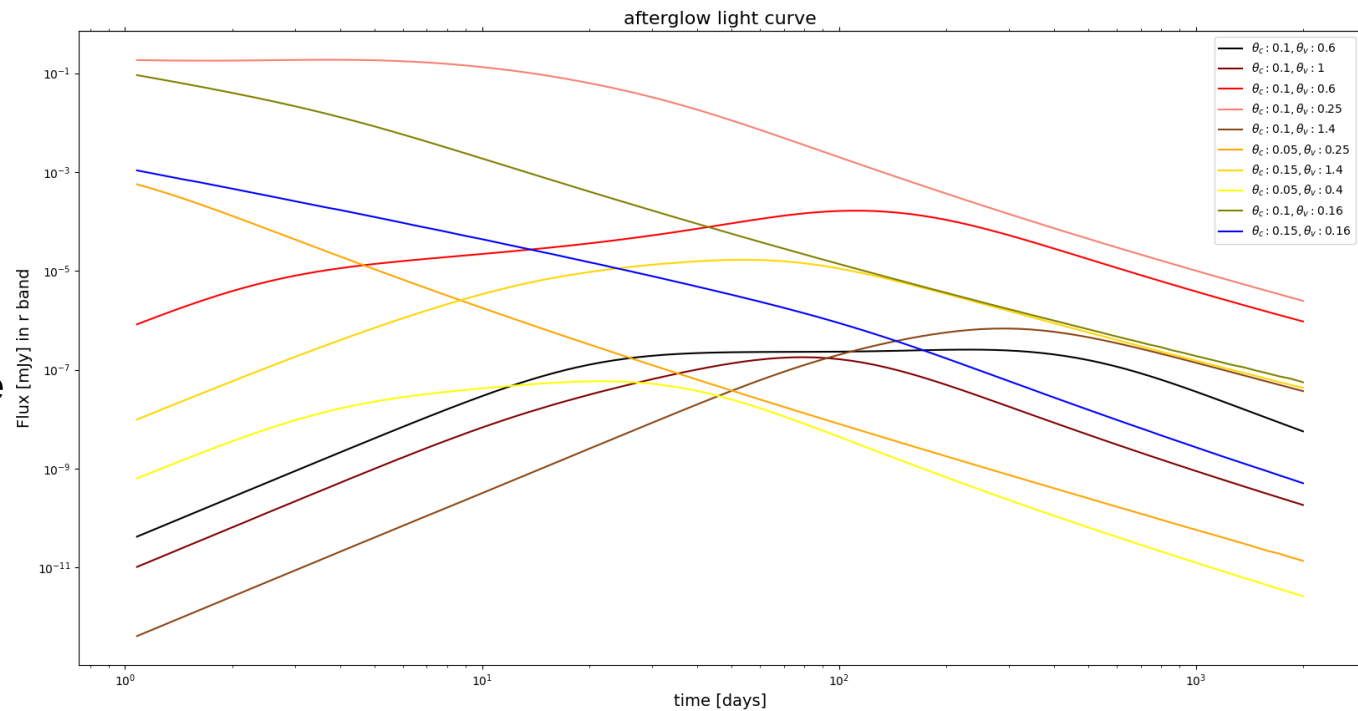
Python

Boulodrome pipeline

Build a template bank with this code to implement a match filtering test in FINK:

Objectives/parameters:

- Synchrotron only
- ZTF r band (preliminary)
- Time sampling coherent with ZTF cadence
- Efficient sampling of the parameter space



Boulodrome pipeline

Build a template bank with this code to implement a match filtering test in FINK:

Parameters values used in the bank

Parameter	Symbol	Range
Jet parameters		
Isotropic energy	E_{iso}	1e+50,3.1623e+50,1e+51,3.1623e+51,1e+52,3.1623e+52,1e+53
Lorentz factor at $t = 0$	Γ_0	100
density of the ambient medium	n_{ext}	1e-4,1e-3,1e-2,1e-1,1,1e1
Fraction of the energy which accelerates the electrons	ϵ_E	0.1
Fraction of the energy which generates the magnetic field	ϵ_B	1e-4,1e-3,1e-2,1e-1
Slope of the electrons Lorentz factors profile	p	2.2,2.5,2.8
Opening angle of the core of the jet	θ_{jet}	0.05,0.1,0.15
Viewing angle	θ_{obs}	0.0001,0.06,0.11,0.16,0.25,0.30,0.40,0.50,0.60,0.70,0.80,1,1.2,1.4
fraction of electrons accelerated at the shock	ζ	1.0
Lateral profile		core + powerlaw
	a	2.5,4.5
	b	2.5,4.5
Number of rings	N_{ring}	20
Distance in Mpc	D	40
Frequency		[5.70e+14,7.10e+14]
Observation time (observer frame)	T_{obs}	[0,1995.26] days
Number of points on the light curve	N_{tobs}	100

Boulodrome pipeline

Build a template bank with this code to implement a match filtering test in FINK:

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84672 lightcurves

Boulodrome pipeline

Build a template bank with this code to implement a match filtering test in FINK:

Safety checks

