ZTF Lightcurve Release Format

ZTF Spring Collaboration Meeting — March 2020

Simeon Reusch (DESY / HU Berlin)

HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

IceCube South Pole Neutrino Observatory

DESY.

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How do we track incremental improvements when reprocessing data?

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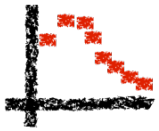
DESY.

Strategy for ZTF photometry data releases: Goals

This is an incomplete collection!



Provide unified and convenient method to reference lightcurves (*ZTF20suchfun DR 2.2*)

Allow collaborative / modular improvements, avoid duplicate work

Use knowledge from calibration group (see yesterday‘s talk by Roger Smith)

Incremental Data Releases

Batch reprocessing of large datasets

Quick retrieval of single object lightcurves

...

Strategy for ZTF photometry data releases

Should run locally, easy setup, little dependencies

Also be able to run in computing centers for batch processing

Strategy for ZTF photometry data releases

Should run locally, easy setup, little dependencies

Also be able to run in computing centers for batch processing

Participants of the initial telecon. This is incomplete!

Melissa Amenouche, Rahul Biswas, Suhail Dhawan,

Christoffer Fremling, Daniel Goldstein, Romain Graziani,

Adam Miller, Jakob Nordin, Eran Ofek, Simeon Reusch,

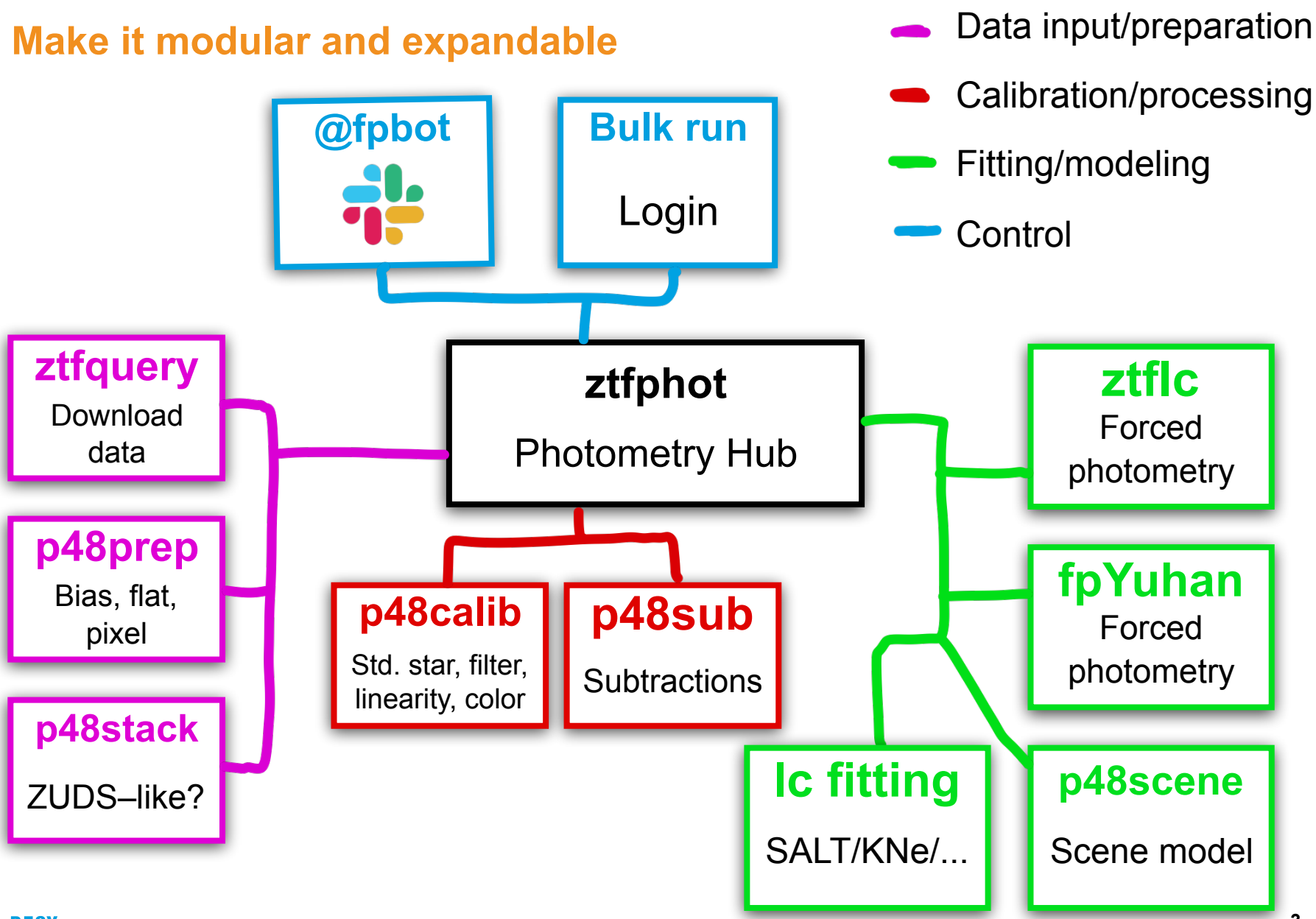
Mickael Rigault, Philippe Rosnet, Steve Schulze, Yashvi

Sharma, Nora Linn Strotjohann, Andy Tzanidakis

Note: We are not planning to do the official Partnership Data Release but merely want encourage development of this tool

It could look like this

Make it modular and expandable



Ideas for the future

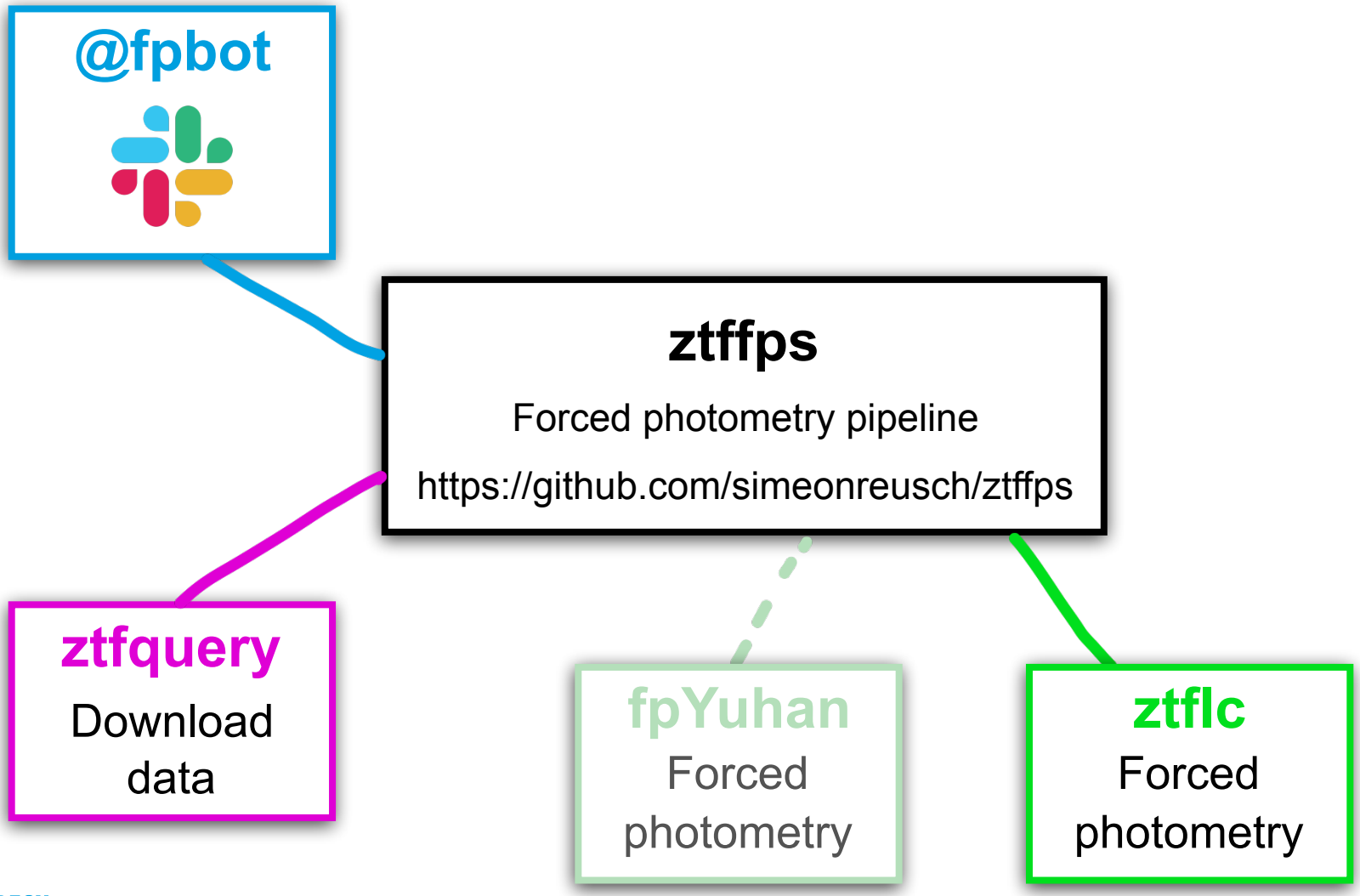
Unified syntax

```
./pipeline.py -preproduction alert -calibration
alert -subtraction alert -photometry ztflc
```

shortcut

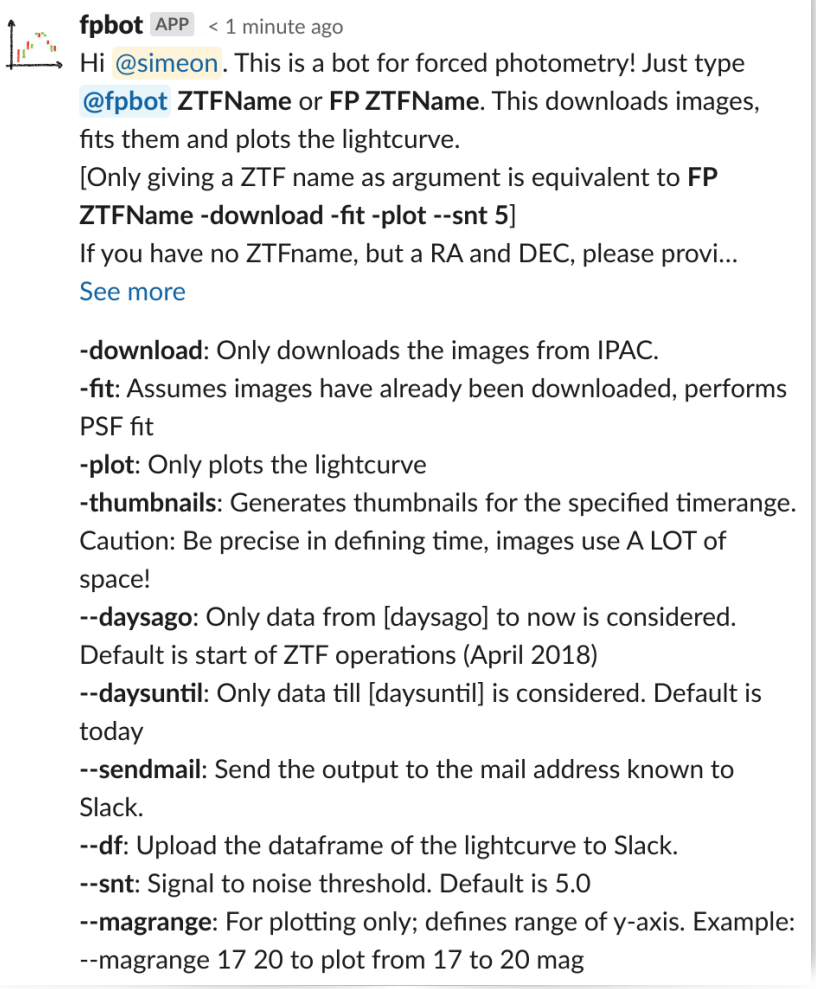
```
./pipeline.py -DR_1.5
```

What I did so far



Current Status of Pipeline – Slackbot

```
@fpbot
```



fpbot APP < 1 minute ago

Hi @simeon. This is a bot for forced photometry! Just type @fpbot **ZTFName** or **FP ZTFName**. This downloads images, fits them and plots the lightcurve.
[Only giving a ZTF name as argument is equivalent to **FP ZTFName -download -fit -plot --snt 5**]
If you have no ZTFname, but a RA and DEC, please provi...
See more

-download: Only downloads the images from IPAC.
-fit: Assumes images have already been downloaded, performs PSF fit
-plot: Only plots the lightcurve
-thumbnails: Generates thumbnails for the specified timerange. Caution: Be precise in defining time, images use A LOT of space!
--daysago: Only data from [daysago] to now is considered. Default is start of ZTF operations (April 2018)
--daysuntil: Only data till [daysuntil] is considered. Default is today
--sendmail: Send the output to the mail address known to Slack.
--df: Upload the dataframe of the lightcurve to Slack.
--snt: Signal to noise threshold. Default is 5.0
--magrange: For plotting only; defines range of y-axis. Example: --magrange 17 20 to plot from 17 to 20 mag

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`@fpbot ZTF20aaelulu`

simeon Today at 10:33 AM
FP ZTF20aaelulu

5 replies

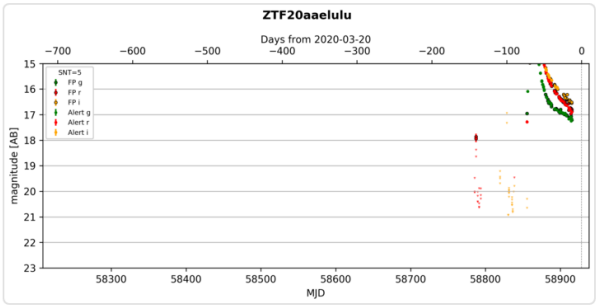
fpbot APP 1 hour ago
You requested forced photometry for **ZTF20aaelulu**. I'll get right to it. Depending on whether the image files need to be downloaded, this can take a few minutes.

fpbot APP 1 hour ago
Checking if all files are present and downloading missing ones. This might take a few minutes.

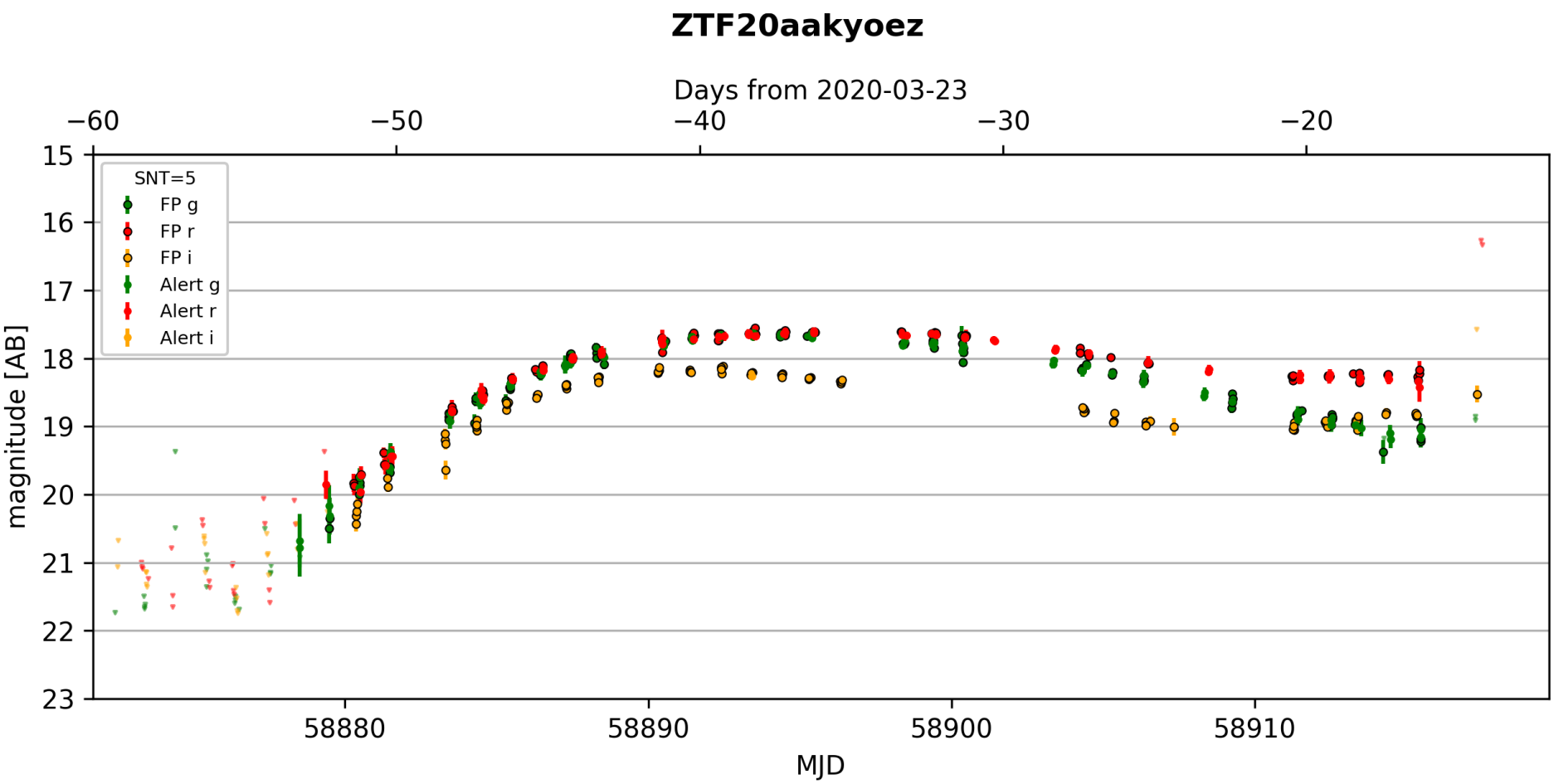
fpbot APP 1 hour ago
Fitting PSF. This won't take long.

fpbot APP 1 hour ago
Plotting lightcurve.

fpbot APP 1 hour ago
And here is your lightcurve.



```
@fpbot ZTF20aakyoez -daysago 60 -daysuntil 13
```



Current Status of Pipeline – Slackbot

Currently in ztf-berlin.slack.com
#forced_photometry

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Currently in ztf-berlin.slack.com #forced_photometry

Ongoing improvements

Sanity checks / checksums for downloaded images

Updates only when new data is available

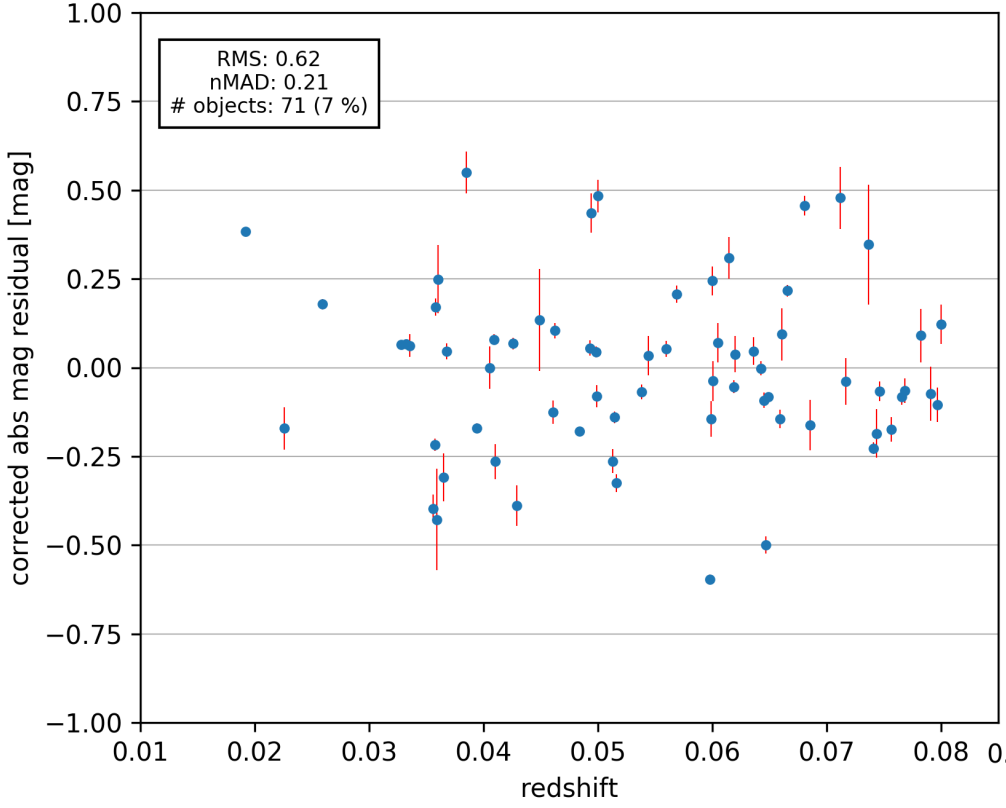
Fits only new datapoints

Fully multithreaded

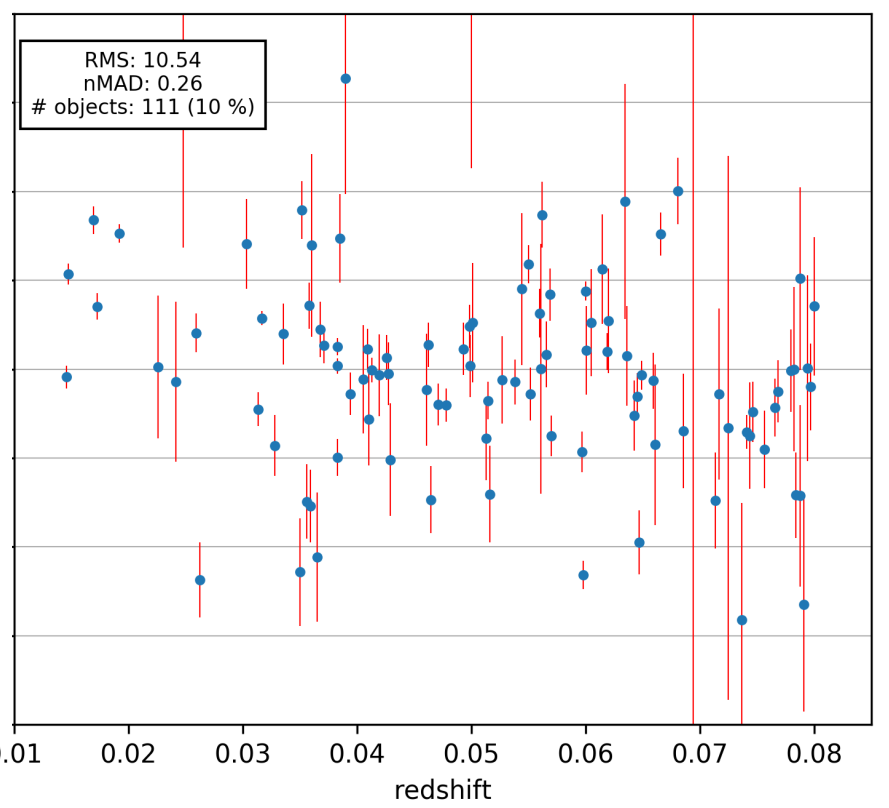
Cosmology sample

SNe Ia with RCF redshifts, $\chi^2 \leq 10$

Forced Photometry



Alert Photometry



Outlook

Right now: Processing complete RCF sample for forced photometry comparison

Finetuning the photometric fitting algorithm and improving *ztflc* (Nora Nicolas, Lyon)

Improved ra/dec? (Suggestion by Frank Masci)

More/better coordination with QA group / creation of a calibration baseline sample as Frank suggested yesterday)

Integration of ZUDS packages (Swarp, hotpants)

Could we obtain MSIP data immediately?