VERA C. RUBIN OBSERVATORY

DP0 Delegate Assembly

Speaker: Sylvie Dagoret-Campagne

Fri Mar 25 2022, 9am-11am US Pacific

Presented by
the Rubin Observatory Community Engagement Team

NSF NOIR Lab AURA SLAC U.S. DEPARTMENT OF ENERGY

Agenda

Today's speakers: Sylvie Dagoret-Campagne
Rubin Staff:

9:00am -- Welcome.
Suggest a breakout topic while we get set up →

9:05am -- Announcements & Delegate Profiles

9:10am -- Presentation:
Photo-z Notebook
Sylvie Dagoret-Campagne

~10:00am (or earlier) -- Breakouts

Breakouts (*if in italics, it's still just a suggestion*)

Room	Topic	Facilitator (needs to be made co-host):
main	general RSP/DP0 Q&A	
1	photo-z	Sylvie
2	resolved stellar populations	Sid
3	PSFs from image & source injection	Henry
4	room of requirement	
	? large scale structure	
	? supernovae	
	? variability	
	? background subtraction	

Announcements

Rubin Users Committee

- announcement ls.st/clo6365
- webpage lsst.org/scientists/users-committee
- first meeting will be Thu Apr 14, 8am PDT
  - all are welcome to join and listen in

Application Form for DP0.2

- point your friends, colleagues, and students at ls.st/clo6362
- *current delegates do NOT reapply*

“Delegate Profiles”

A feature of our Delegate Assemblies.

Who: All delegates who want to participate.

What: A single-slide, ~30-second introduction to your science interests regarding Rubin DP0.

When: At the start of DP0 Delegate Assemblies.

Why: To enable networking between delegates, and inspire collaborative working groups.

How: Follow the instructions on the next slide.

Keep in mind that all delegates are encouraged to share their DP0 interests and work on Community.lsst.org, in our Data Preview 0 category, at any time!

DP0 Delegate Profiles

photos ok

plots ok too

Copy-paste this template slide and fill it in for yourself. Paste it right after this slide. Be ready to unmute when the host displays your slide during the Delegate Assembly. **You'll have ~30-60s to speak**. **Thank you for participating!**

Start with basic information such as:

- Name
- Affiliation
- Career Level

Then add some sciencey stuff like:

- Rubin Science Interests
- DP0-Specific Interest (if you've formed one yet)
- Interested in collaborating on any DP0 investigations?
- Things you want to learn

Jose A. Acosta Pulido

- Senior Astronomer
- @ Instituto de Astrofísica de Canarias - SPAIN

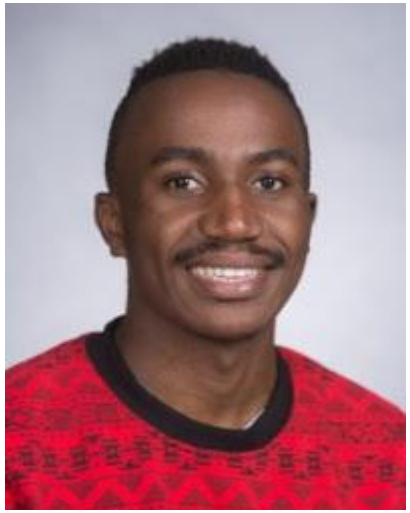
Science Interests:

- AGN variability studies:
  - Blazars optical light curves/MWL behaviour
  - Changing-Look AGNs

DP0 Interests:

- Learn to retrieve light curves from selected blazars
- Learn to detect/characterize transient events/flares in light curves
- Learn to use stack images to determine morphologies of compact/distant blazars to establish redshift
-

Christian Aganze



About:

- Graduate Student
- University of California, San Diego, CA, US

Science Interests:

- Galactic archeology with brown dwarfs
  - Finding distant brown dwarfs in deep HST fields
  - Simulating expected yields and colors of brown dwarfs with the Rubin Observatory, Euclid and Roman
- Galactic dynamics & dark matter
  - Simulating gaps in stellar streams from their interactions with dark matter subhalos

DP0 Interests:

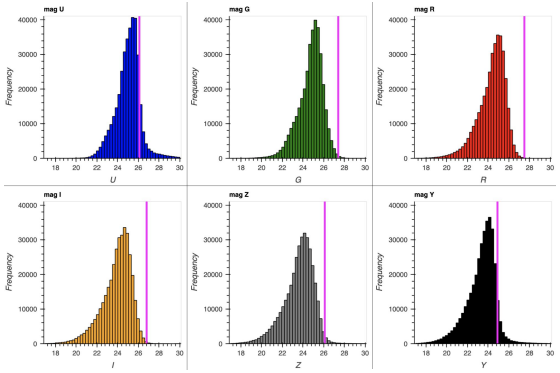
- Re-simulate brown dwarfs in DP0.1 and DP0.2 (LSST Kickstarter)
- Learn to use the MAF framework
- Learn how to access the original simulation inputs from DP0.1 and DP0.2

Blank slide to follow delegate profiles.

Sylvie's slides start here

Make a demo to show how to use scikit-learn Machine Learning Photo-Z estimator

Magnitude selection (demo skipped)



Balmer break shift through filters

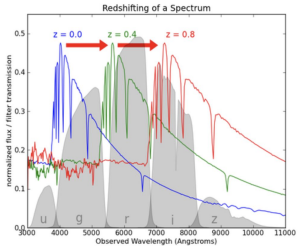
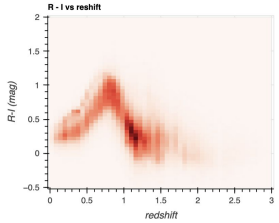


Photo z from pattern in colors

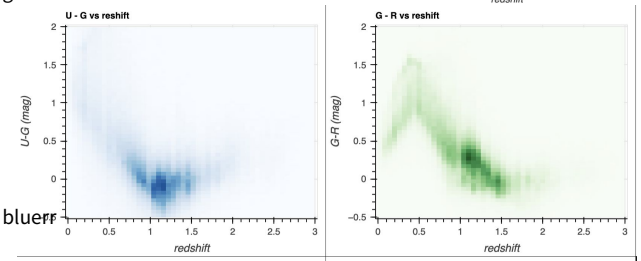
more I

more R



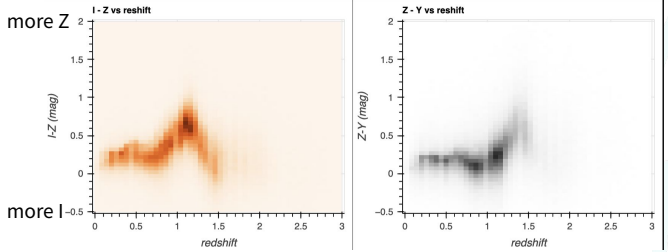
greener

bluer

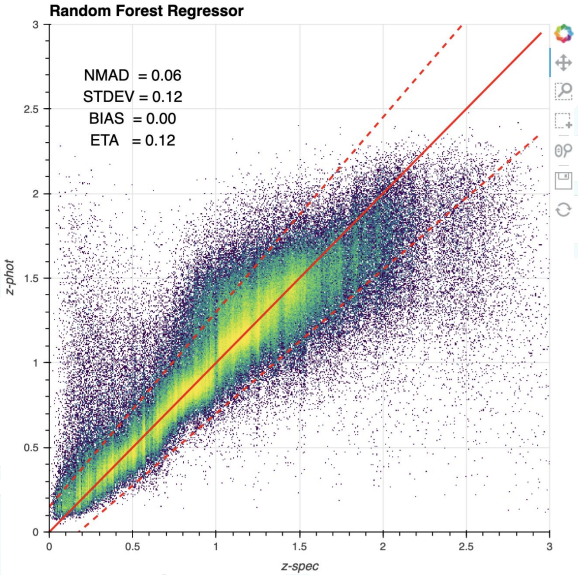


more Z

more I

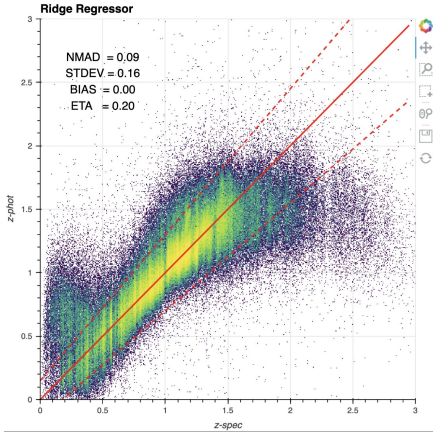


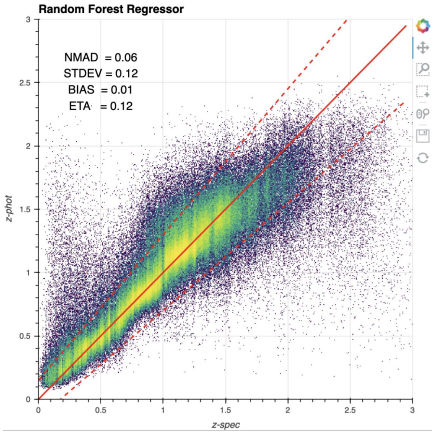
Inject 6 magnitudes to PhotoZ estimator

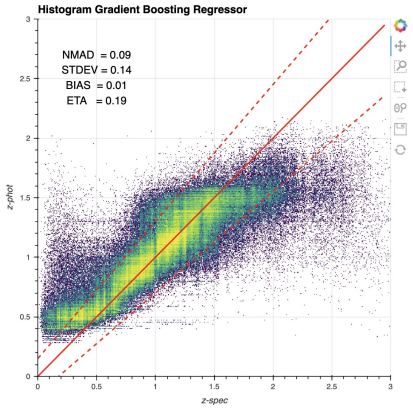


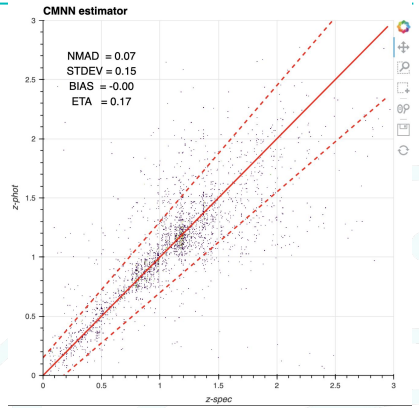
Balmer break leaves LSST filters at z> 1.4
Lyman break enters LSST filters at z > 2.5

Comparison of 4 Photo-Z estimators









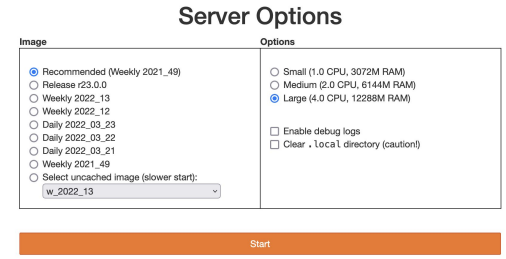
Part 2 address the question of optimization of hyper parameters (parallel session)

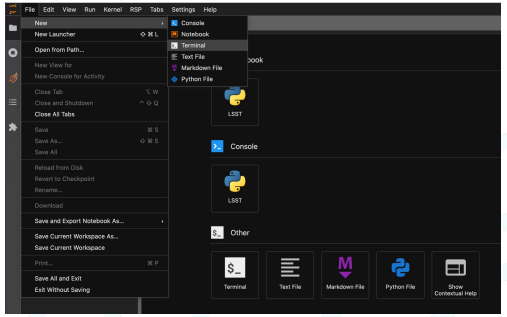
Topics : validation curves, learning curves, cross validation, grid search and random search

1.

Instructions to connect RSP and get the delegate-contributions-dp0.1

1) Go to the RSP : https://data.lsst.cloud/
2) Connect with DM-Stack version proposed.
   a) Choose the notebook presentation (middle panel)
   b) I will use 4 CPU because some calculations are done in the notebooks

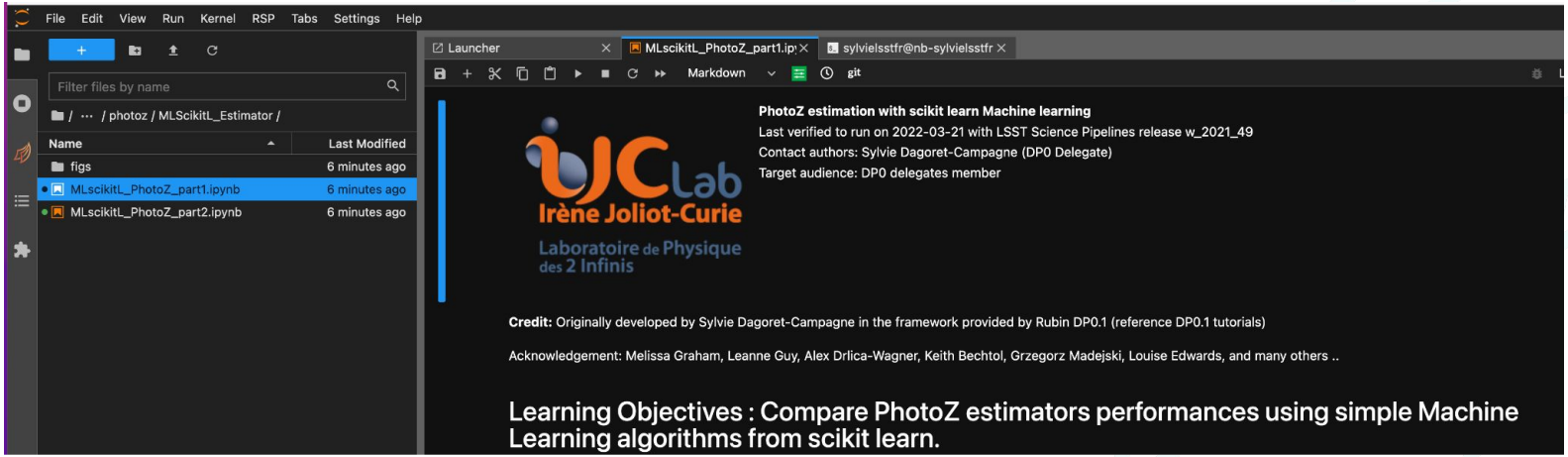




3) Go your working directory and get the photoz notebook:
   a) Create a terminal window
   b) Retrieve the main branch from GitHub:
      i) git clone https://github.com/rubin-dp0/delegate-contributions-dp01.git
      ii) or do : git clone in-dp0/delegate-contributions-dp01.git
   c) Or refresh your delegate-contributions-dp01.git (by git fetch, git pull)

Instructions to open the notebook MLscikit_PhotoZ_part.ipynb

1) Go in PhotoZ/MLScikitL_Estimator/ directory from terminal:
   cd delegate-contributions-dp01/
   cd photoz/
   cd MLScikitL_Estimator/
2) Go to the notebook navigating through the left column



Instructions to bypass the database query (optional)

To speed up the demo:
From the terminal window:

```
[sylvielsstfr@nb-sylvielsstfr scratch]$ ls
ajax6255  bjwhite-fnal     douglasleetucker  jeffcarlin  leannep       maxdallora     shsuyu          TAP_verify_DP0.1-object_cat.ipynb  tloredo
alxogm    caganze          ebusa             jvazquez77  ledwar04      melissagraham  simonkrughoff   TAP_verify_DP01.object.csv         trianaa
annis     christinaadair   gschwend          kadrlica    lionandjelka  mpwiesner      sylvielsstfr    t-ferreira
[sylvielsstfr@nb-sylvielsstfr scratch]$ whoami
sylvielsstfr
```

- If your your-username appears, then cd username
- Or check your-username (whoami)
  - Create your folder mkdir your-username

cd your-username
cp -r ../sylvielsstfr/photoz_part1
cd photoz_part1/ ; ls

```
[sylvielsstfr@nb-sylvielsstfr scratch]$ cd sylvielsstfr/photoz_part1/
[sylvielsstfr@nb-sylvielsstfr photoz_part1]$ ls
cat_photozpart1_result.pkl
[sylvielsstfr@nb-sylvielsstfr photoz_part1]$
```

You should have the file **cat_photozpart1_result.pkl** as the result of the query