

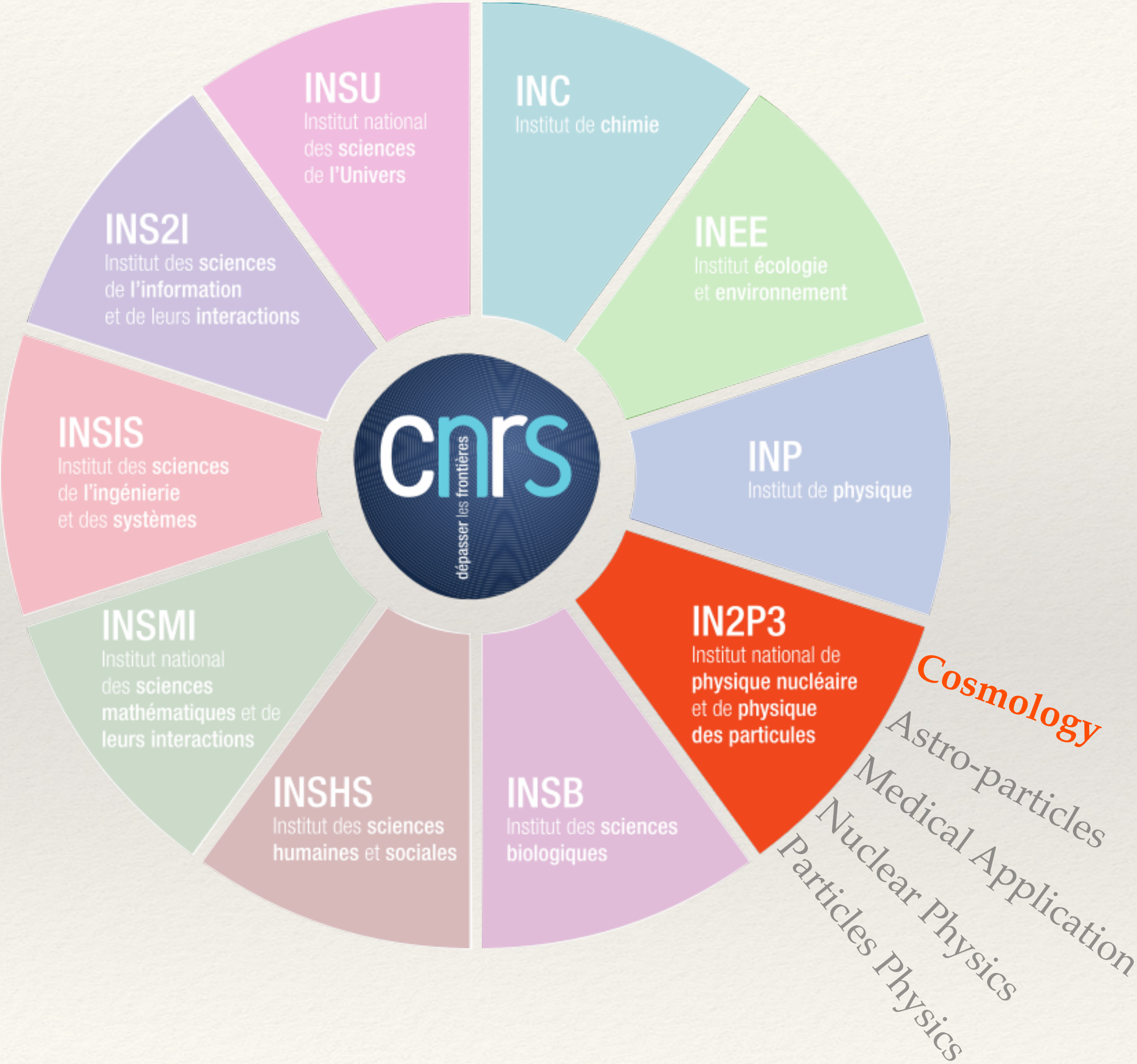


ZTF-II | IN2P3 working group



CNRS/IN2P3

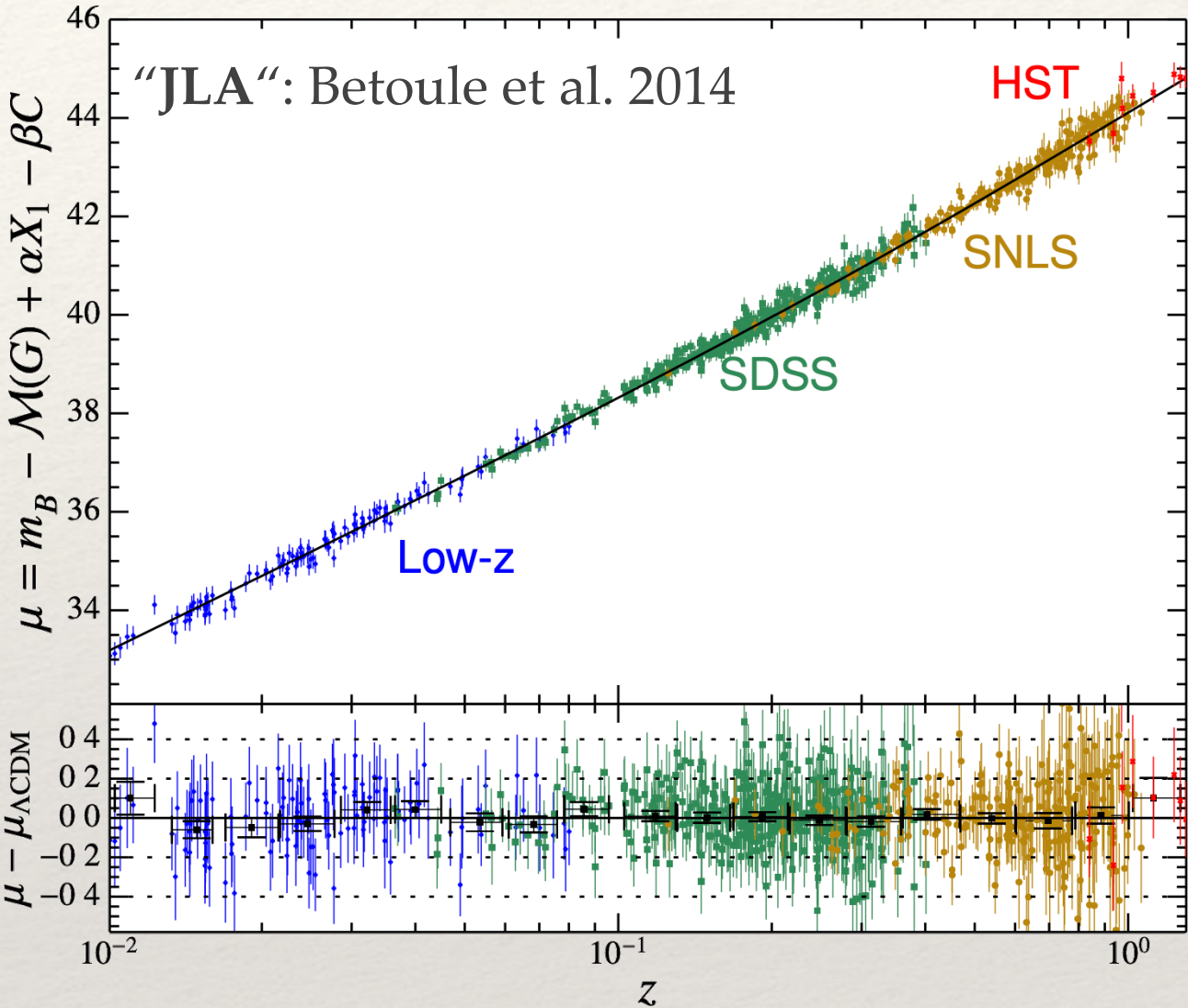
“Extract precision sciences from complex dataset”



TYPE IA SUPERNOVA RESEARCH

SNLS
High Redshift Photometry

SNfactory
Low-Redshift Spectrophotometry



Subaru
LSST depth, small area

ZTF-II

LSST

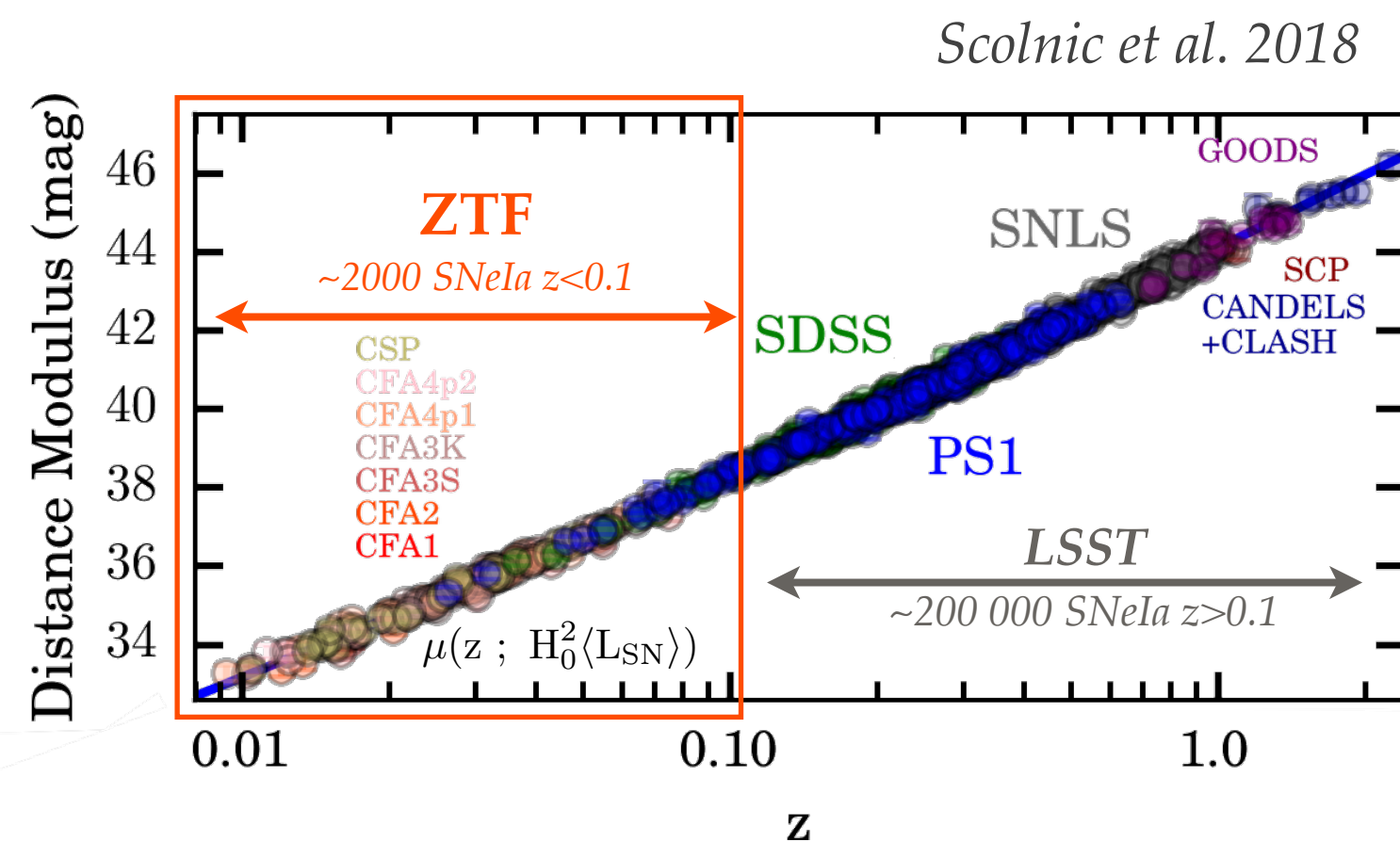
- IN2P3 is a builder together with Chile and US
- 50% of data process at CC-IN2P3
 - Built the Filter exchanger
 - Built Camera read-out chips
 - Camera Characterisation

ZTF IN2P3-WG

— SUPERNOVA COSMOLOGY —

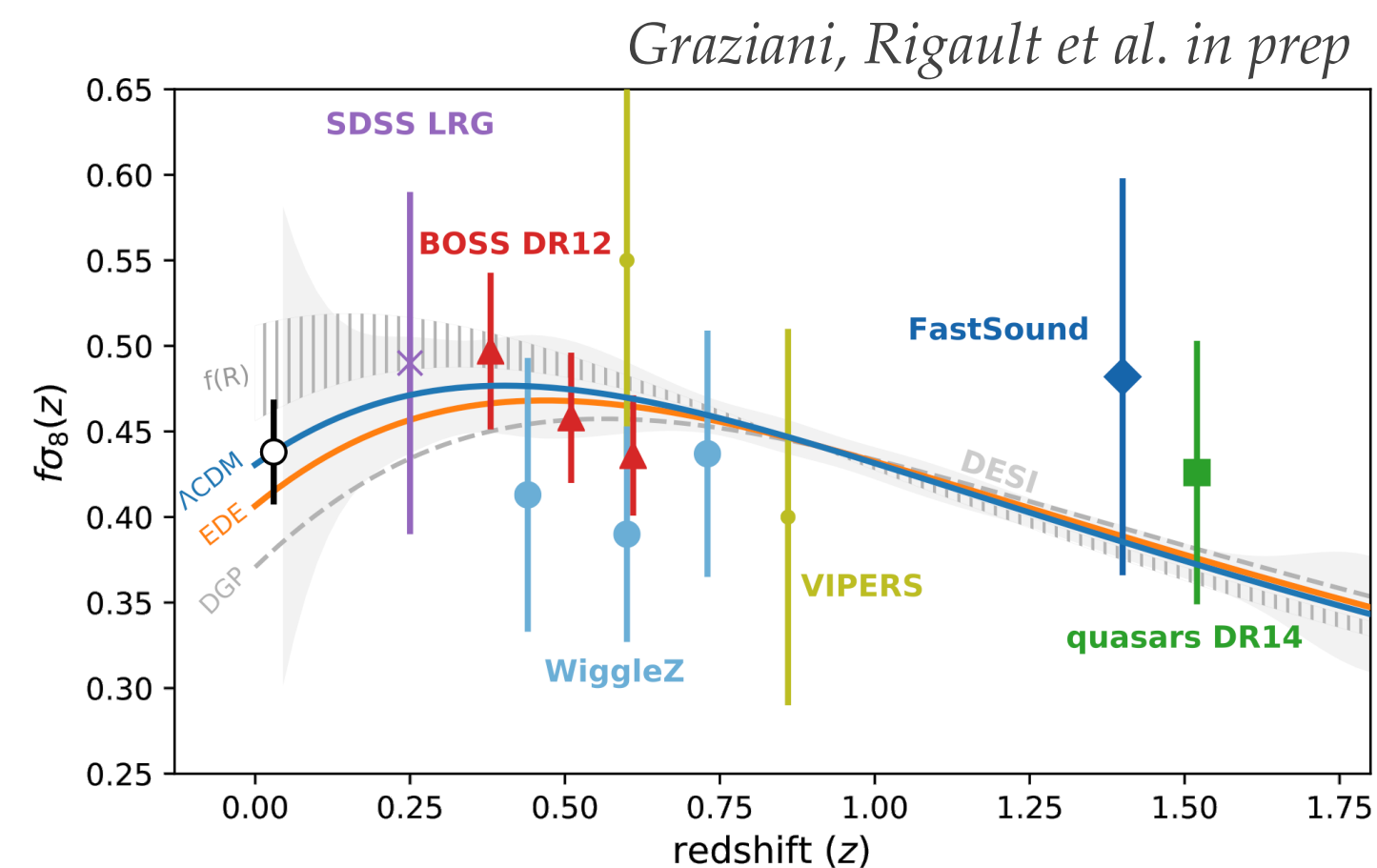
Dark Energy (w_0, w_a)

Make ZTF the 2020-decade Anchoring Sample



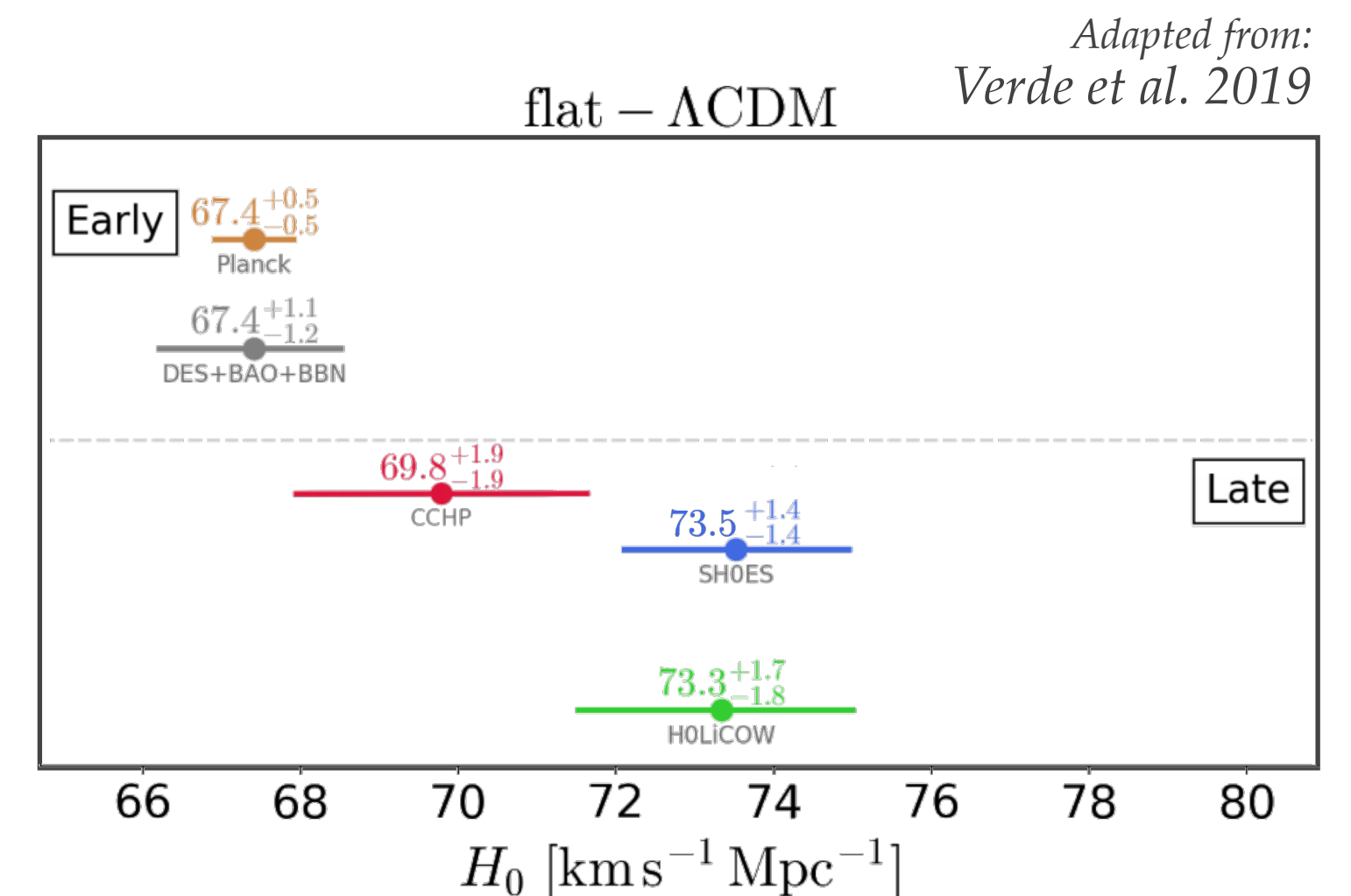
Growth Rate of Structure ($f\sigma_8$)

Unlock the test of gravity using peculiar velocities



Hubble Constant (H_0)

Solve the Hubble-Lemaître Mystery



Large statistics ($O(5000)$ SNeIa) | Few per mil photometric calibration precision | Control selection function

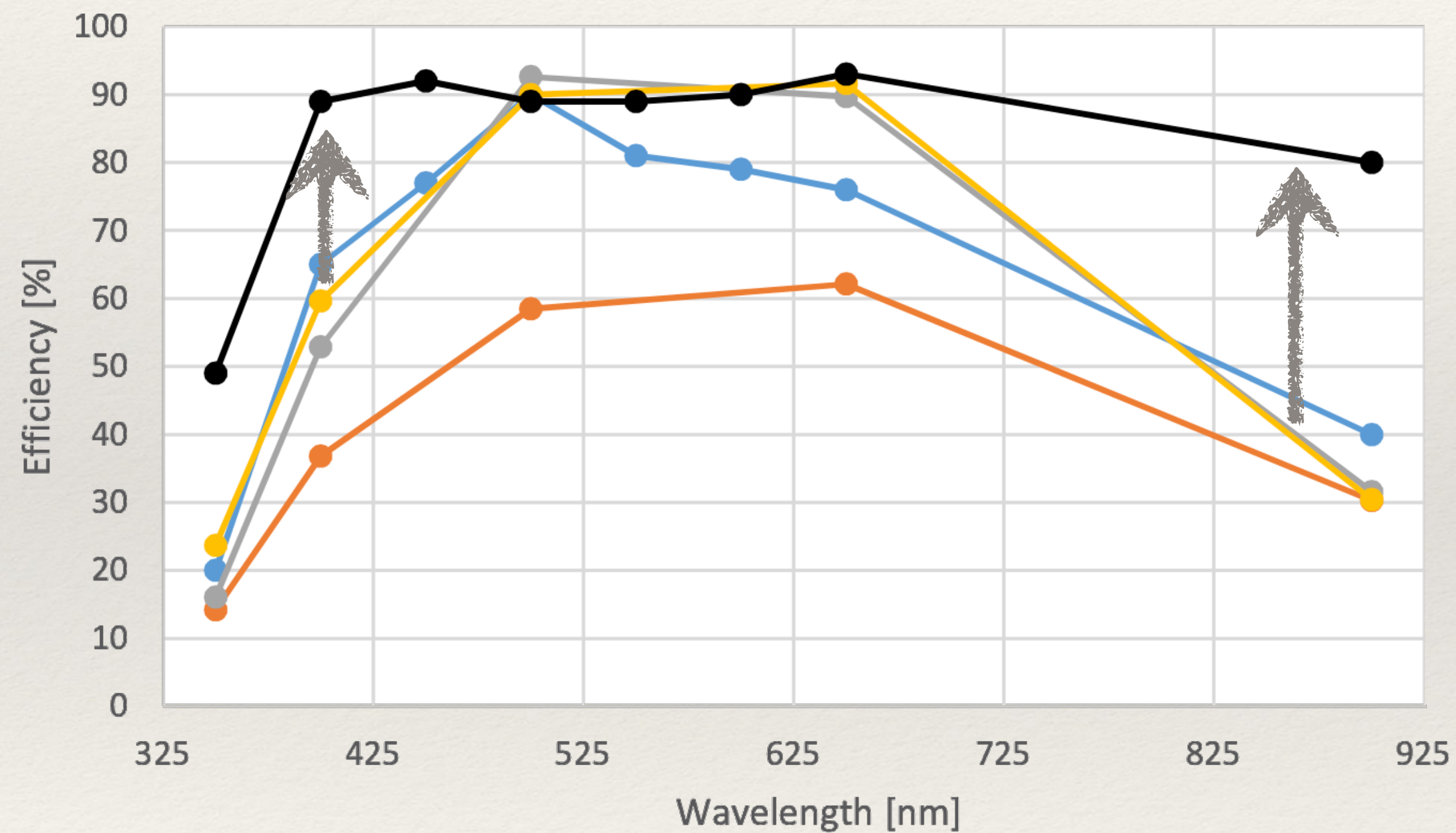
— and few days cadence I-band of the extra-galactic sky —

Boost the SEDm efficiency

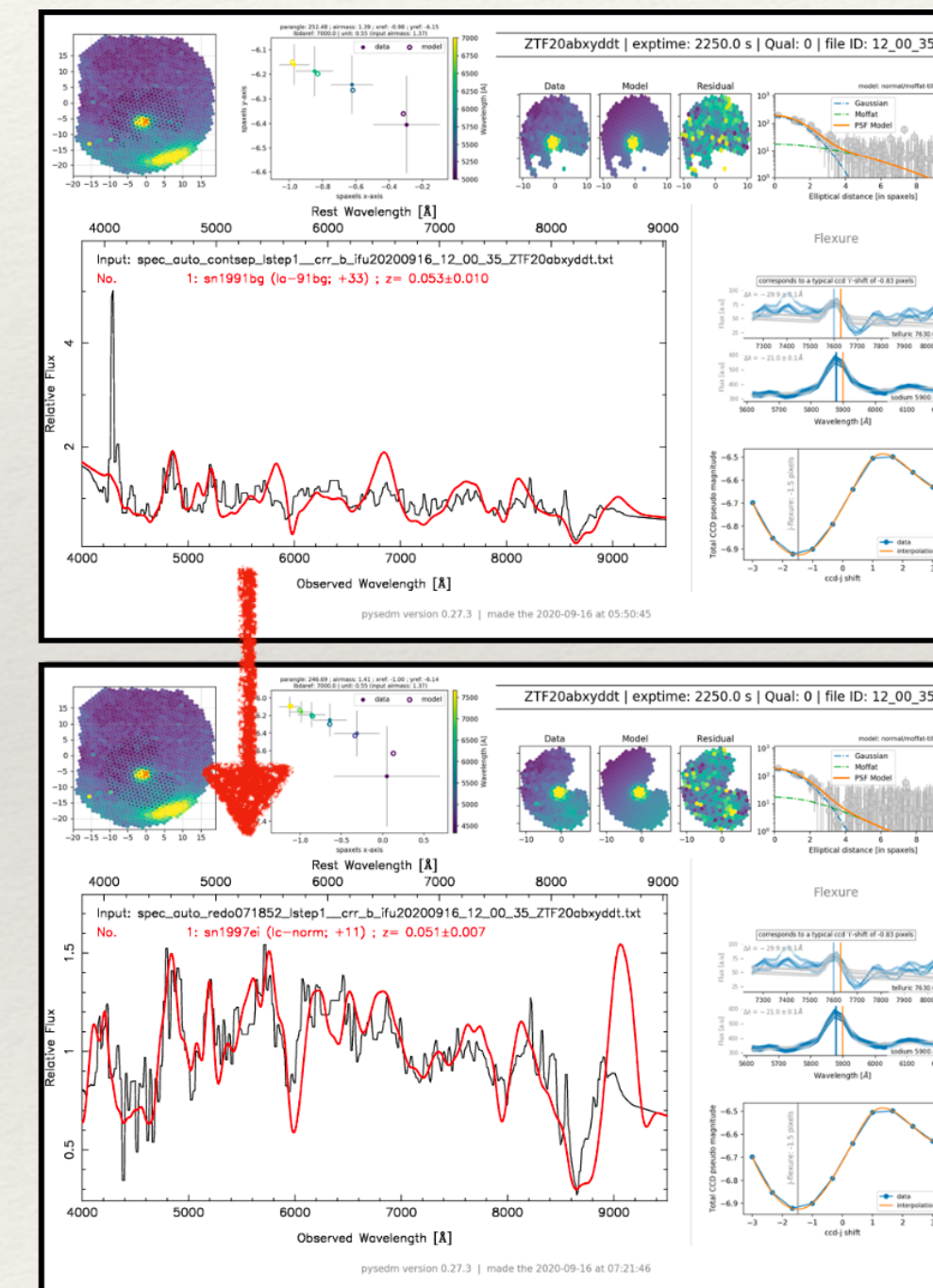
See Don's
Talk on Day 1

Upgrade the Hardware
Buying a new camera

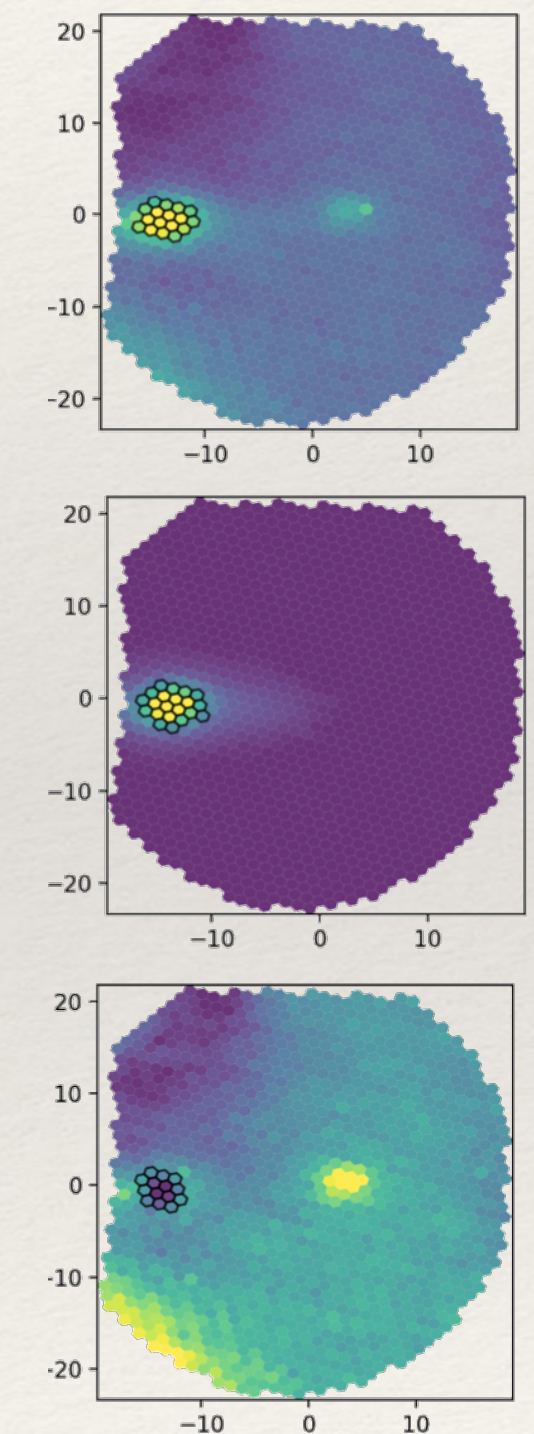
Upgrade the Software
Cosmics & background



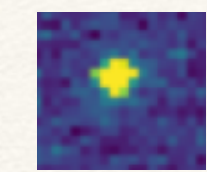
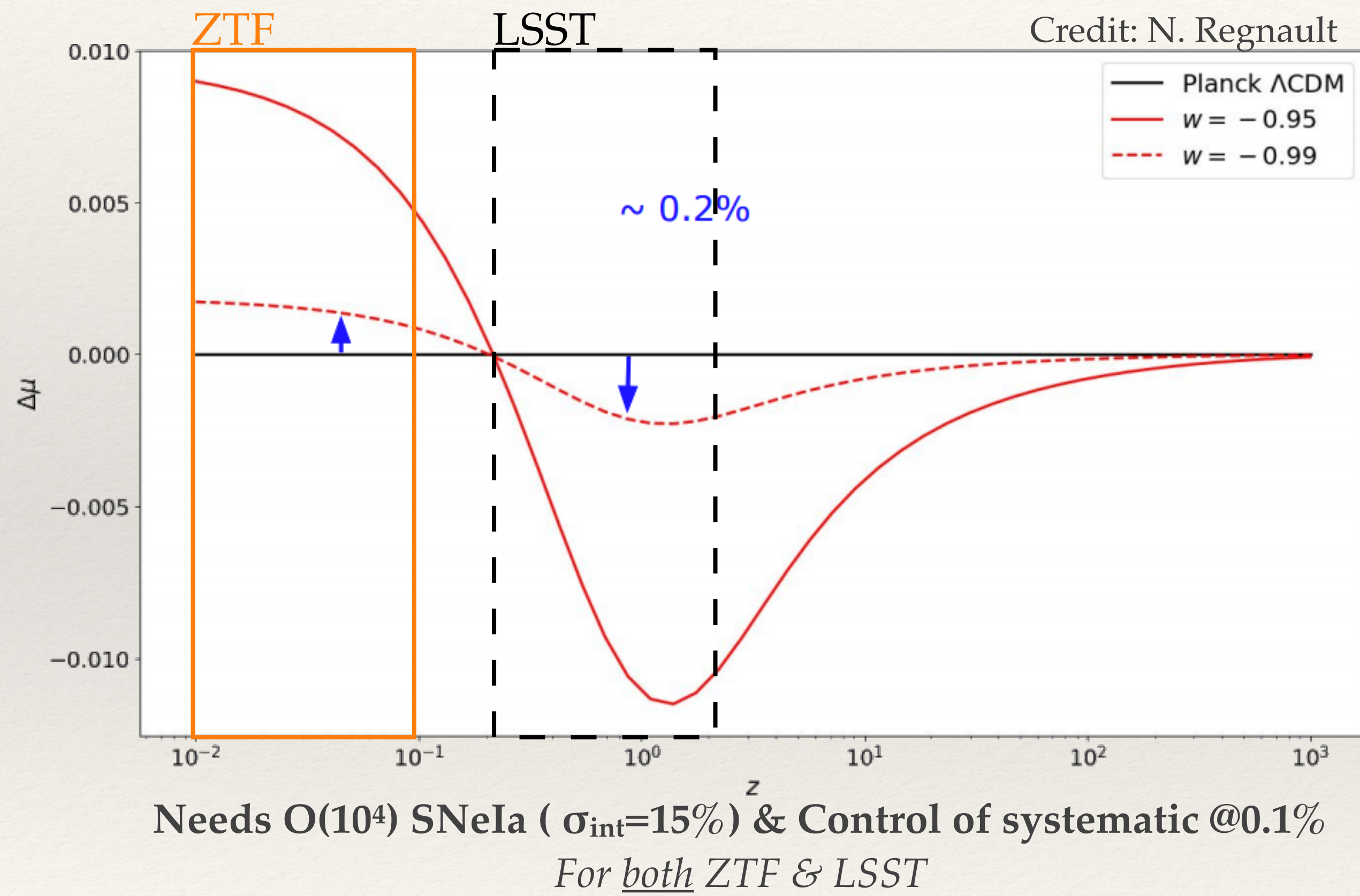
Cosmics Removal



Host modelling



Toward the per mil precision



ccd counts

The whole IN2P3-team will focus on that for us all

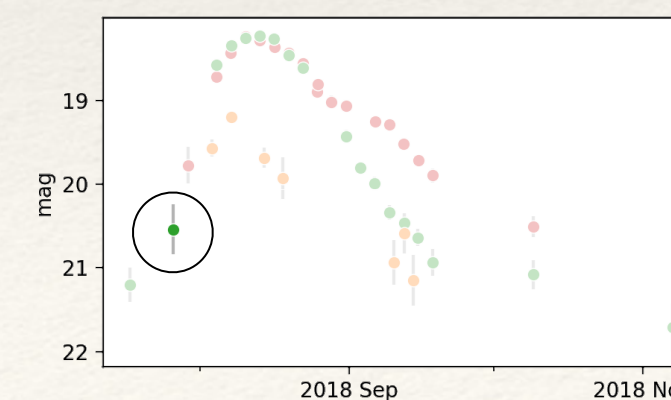
Flat Fielding

PSF

Host background model

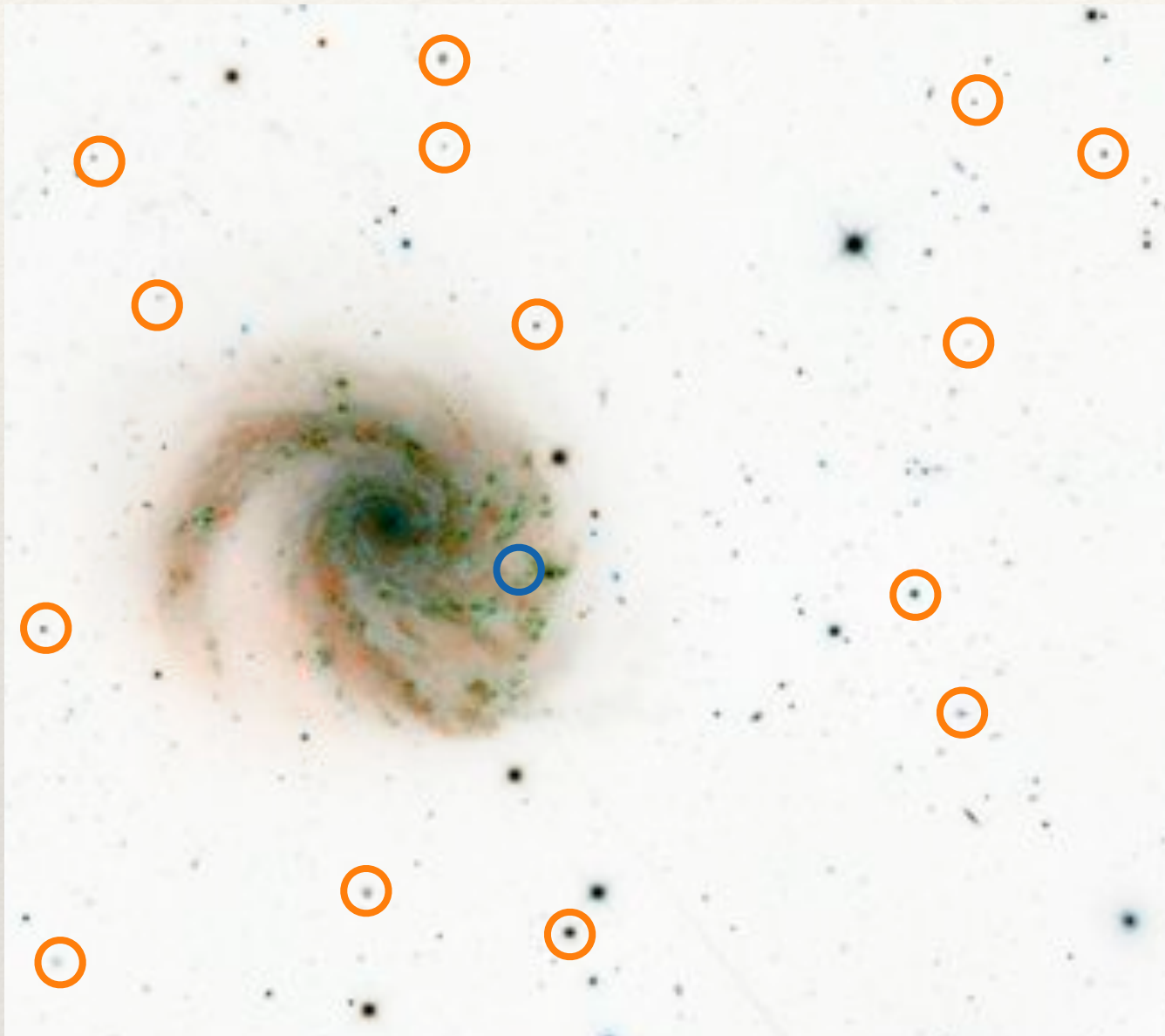
Flux Calibration

Filter Throughput (A)



Scene modelling in place of forced photometry

All information optimally used



SCENE MODEL

- Stars (Dirac) *constant* on average
-  Background = Pixel model | *constant*
- Transient (Dirac) *variable* flux



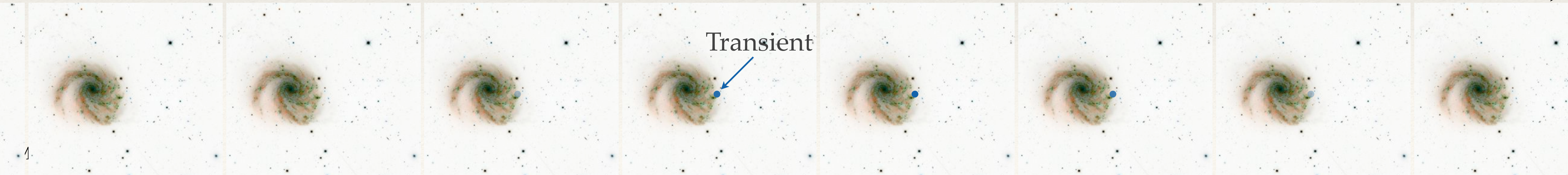
=

Observation

OBS. MODEL

Image PSF & Atmospheric Throughput
Variable

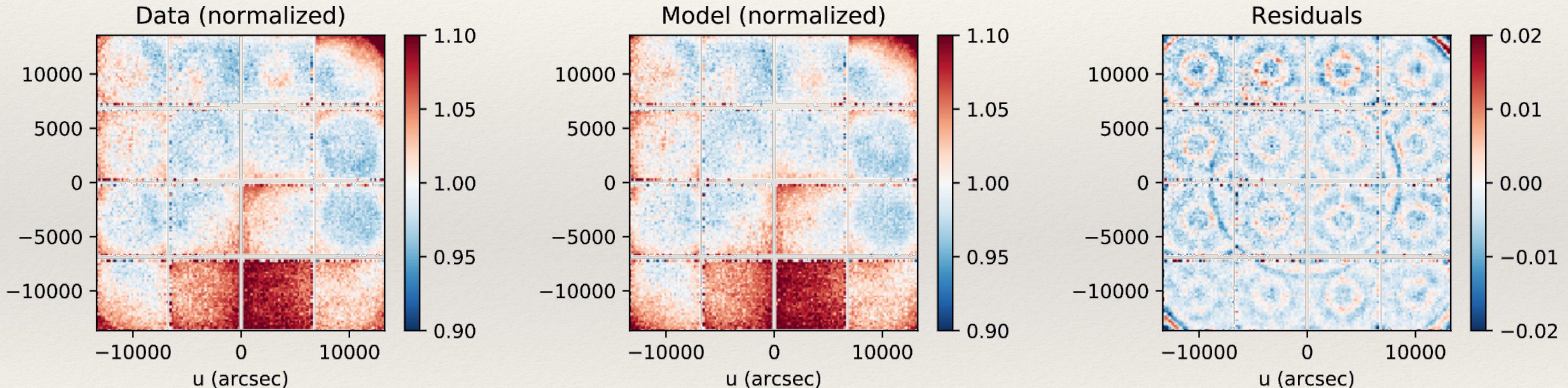
$O(10^3)$ images



Step 1: PSF Estimation, ZIFF

Based on PIFF (Jarvis et al. in prep)

Fit of a pixel grid interpolated within a CCD (not quadrant) in the “RA/Dec” space (not x,y)



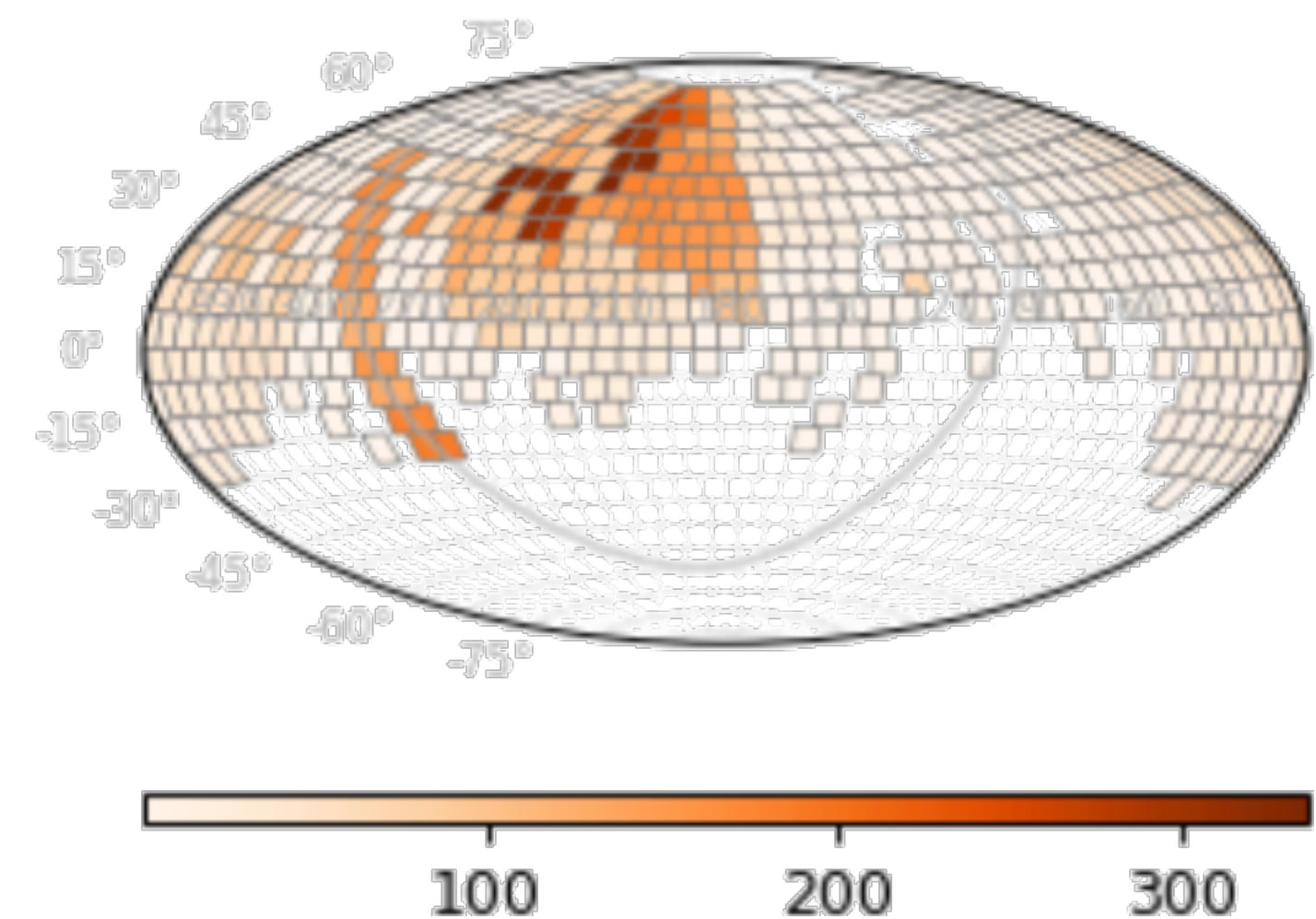
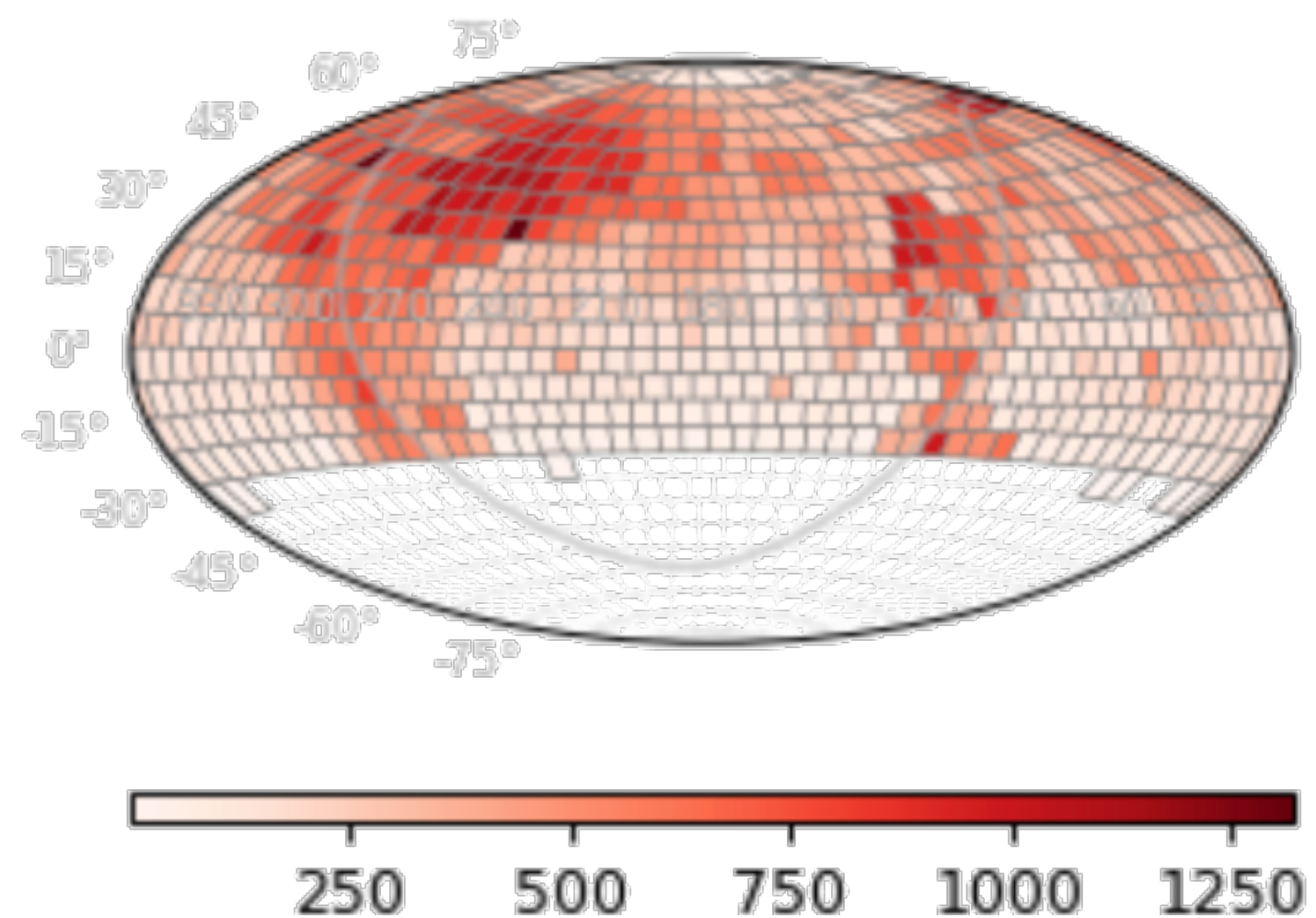
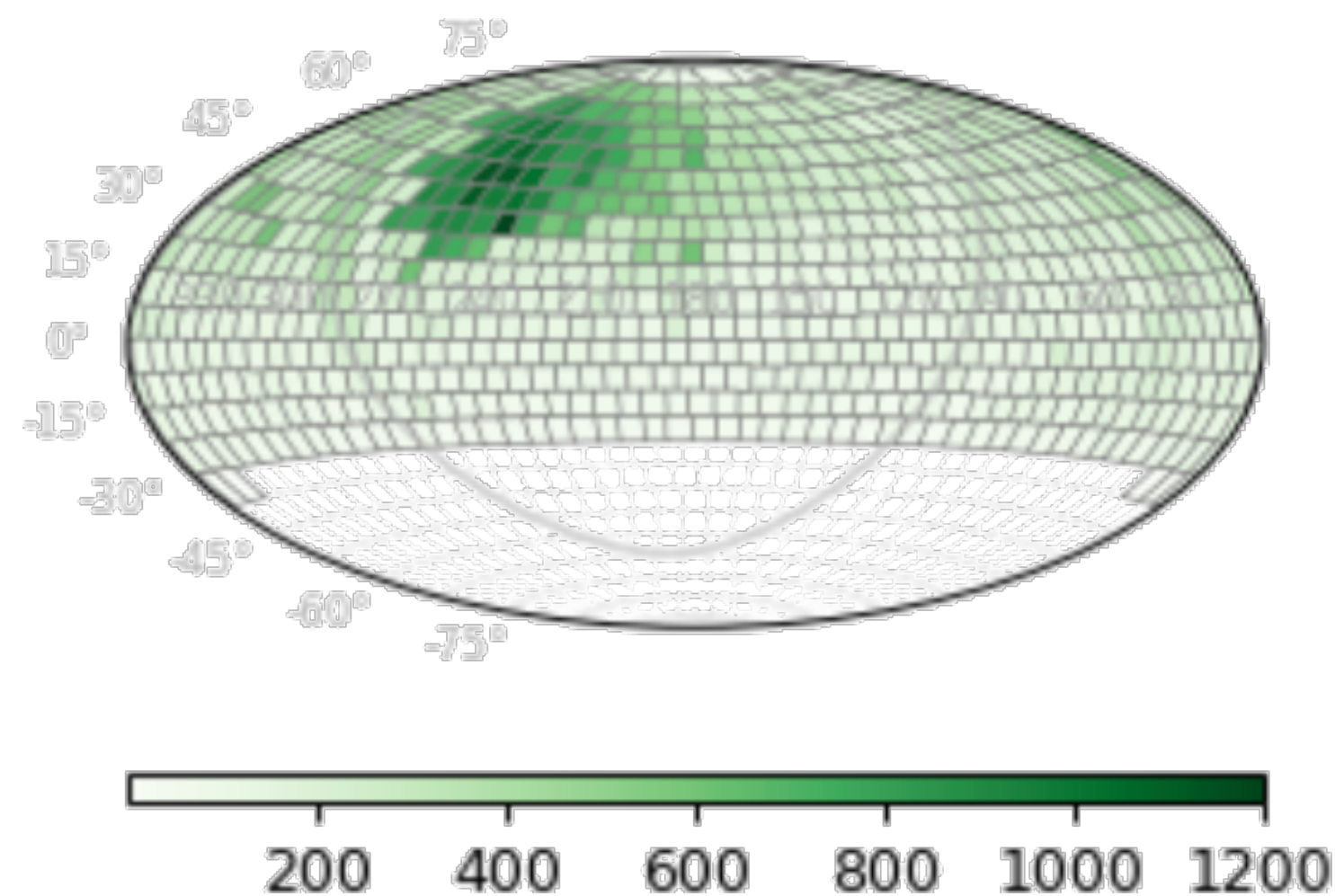
Relative PSF size, 1 night of data, g-band

Continue Software Support

pysedm : *reduce, open, extract spectrum from the SEDm*

ztfquery : *Accessing ZTF data (IRSA, Marshal, SEDm, Logs)*

And soon Fritz



If you like **ztfquery**, have a look at
ztfic (Force Photometry) • **ztfimg** (open IRSA images and Catalogs) • **zfttarget** (Target Sciences)



Mickael Rigault
PI



Nicolas Regnault
Co-PI

Photometric calibration



Romain Graziani



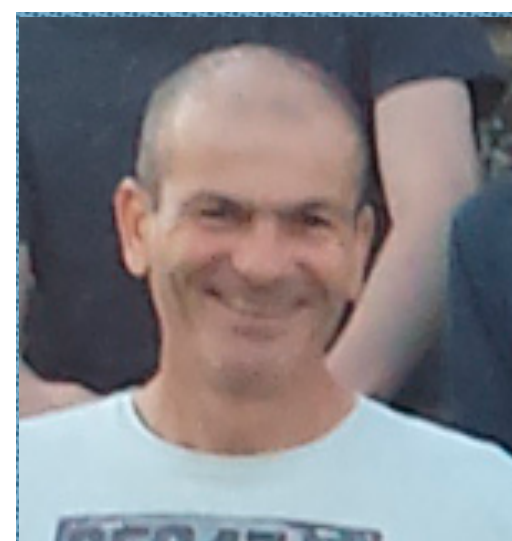
Melissa Amenouche



Philippe Gris



Benjamin Racine



Philippe Rosnet



Fabrice Feinstein

Expertise



Pierre Antilogus



Marc Betoule

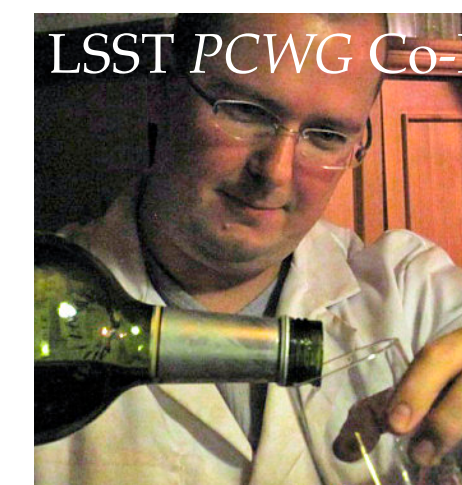


Pierre Astier

LSST/DESC



Emmanuel Gangler



Sebastien Bongard



Dominique Fouchez

Few additional PhDs & Postdocs are expected
Bastien Carreres | Julian Bautista

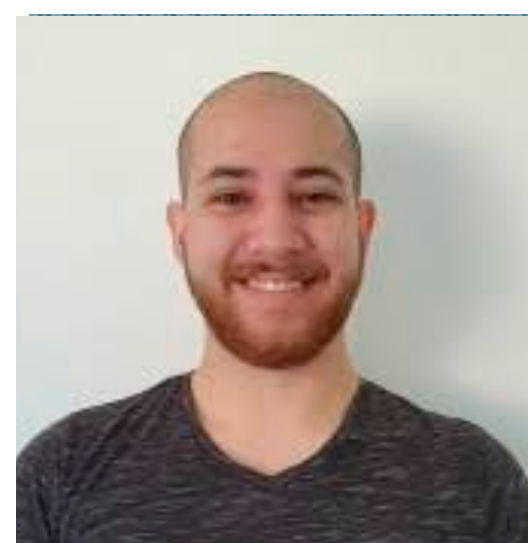
SEDm



Yannick Copin



Young-Lo Kim



Jeremy Lezmy



Laurent Le Guillou



Delphine Hardin

New Camera characterisation

Transient host models



Martin Briday



Mat Smith



Nora Nicolas