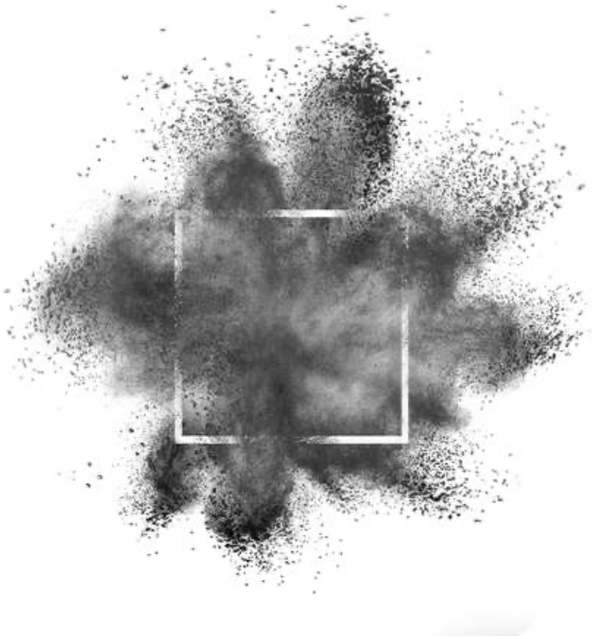
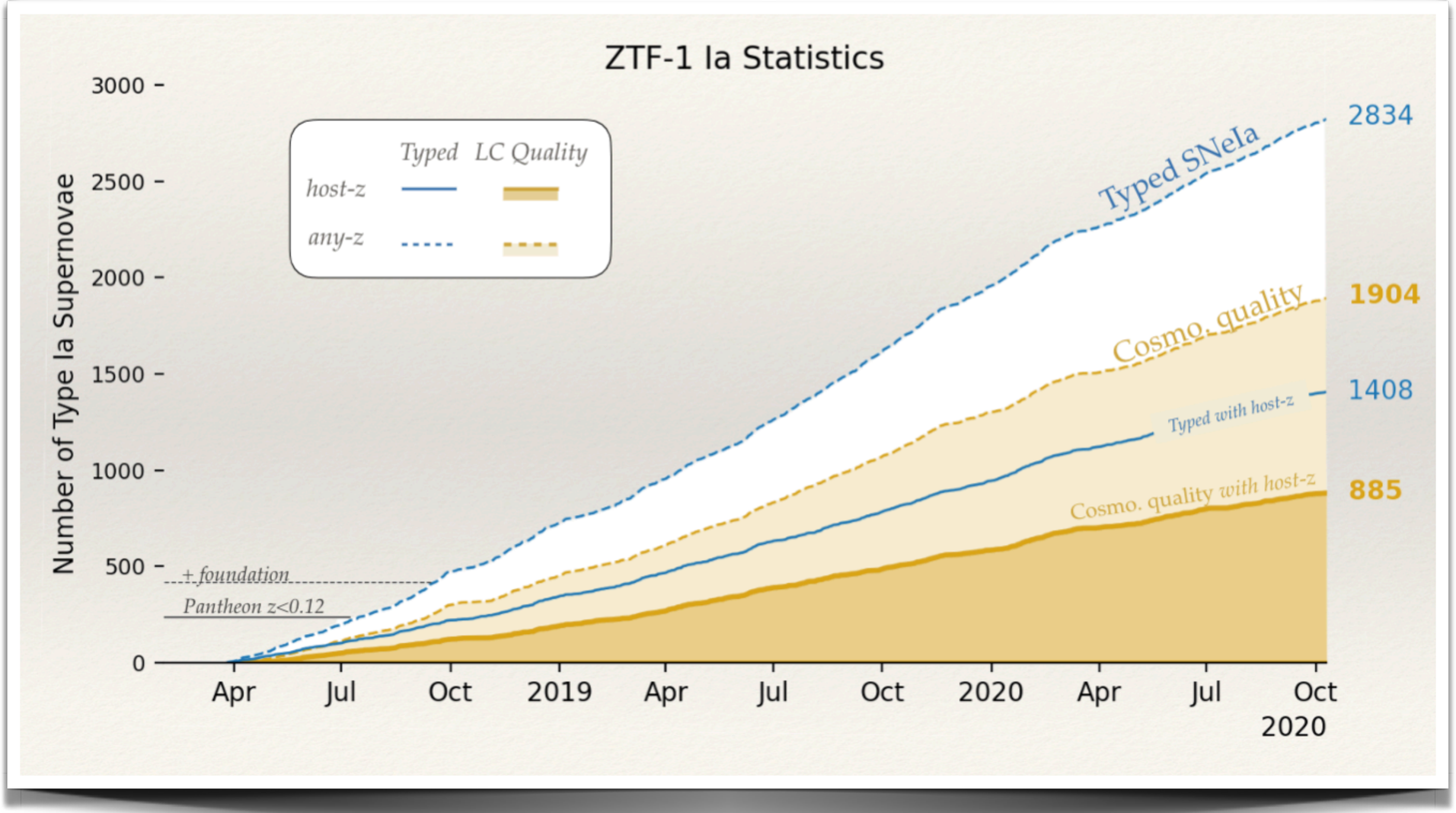


ZTF : the DR2 Sample

Where we are today

Zwicky Transient Facility

DR2

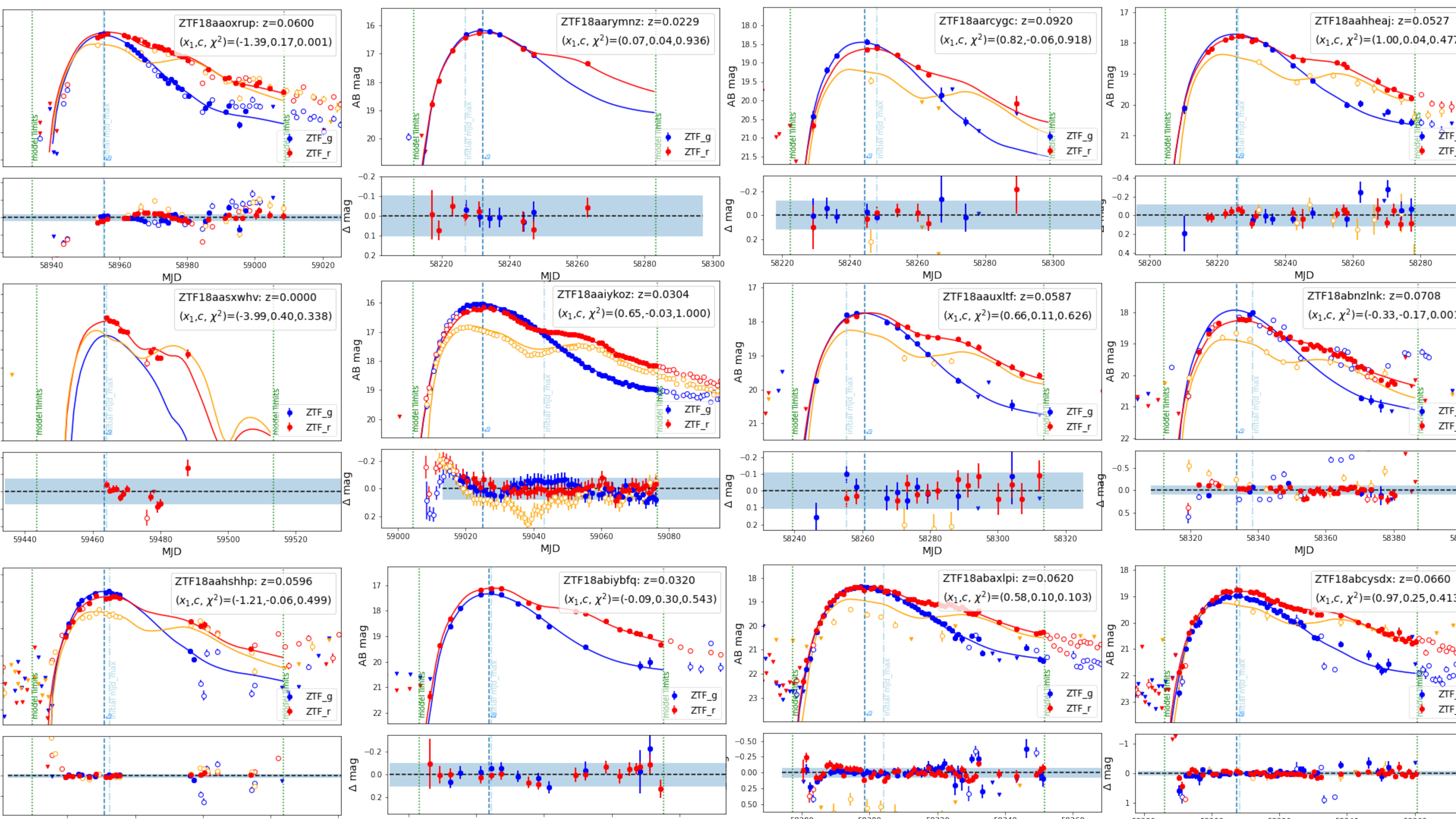

ZTF-1 Ia Statistics
Number of Type Ia Supernovae
3000
2500
2000
1500
1000
500
0
Typed
LC Quality
host-z
any-z
+ foundation
Pantheon z<0.12
Typed SNeIa
2834
Cosmo. quality
1904
Typed with host-z
1408
Cosmo. quality with host-z
885
Apr
Jul
Oct
2019
Apr
Jul
Oct
2020
Apr
Jul
Oct
2020

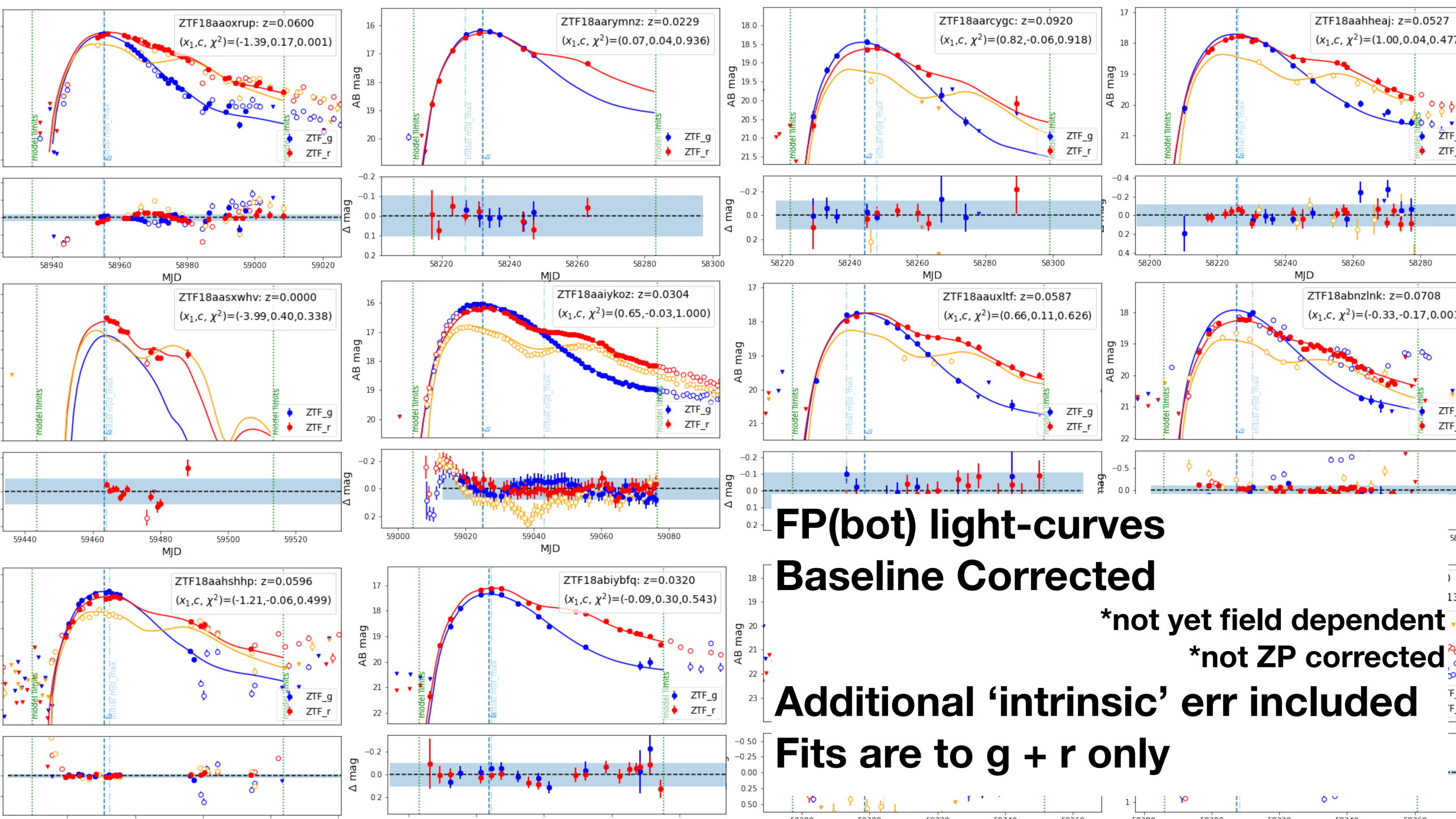
The Statistics

* from host galaxy: does not include gal_z from SN spec

	All Z	Spec Z*
Total SNIa	3824	1481 (39%)
With ‘some LC’	3721 (97%)	1445 (98%)
Pass LC quality cuts	3100 (81%)	1125 (76%)
Pass Cosmo quality cuts	2624 (69%)	923 (62%)

(Of Cosmo Ia’s:)		
Z<0.04	320	198 (62%)
Z<0.05	539	306 (57%)
Z<0.06	828	453 (55%)


ZTF18aaoxrup: z=0.0600
(x_1,c,χ^2)=(-1.39,0.17,0.001)
ZTF18aarymnz: z=0.0229
(x_1,c,χ^2)=(0.07,0.04,0.936)
ZTF18aarcygc: z=0.0920
(x_1,c,χ^2)=(0.82,-0.06,0.918)
ZTF18aahheaj: z=0.0527
(x_1,c,χ^2)=(1.00,0.04,0.47
ZTF18aasxwhv: z=0.0000
(x_1,c,χ^2)=(-3.99,0.40,0.338)
ZTF18aaiykoz: z=0.0304
(x_1,c,χ^2)=(0.65,-0.03,1.000)
ZTF18aauxltf: z=0.0587
(x_1,c,χ^2)=(0.66,0.11,0.626)
ZTF18abnzlnk: z=0.0708
(x_1,c,χ^2)=(-0.33,-0.17,0.00
ZTF18aahshhp: z=0.0596
(x_1,c,χ^2)=(-1.21,-0.06,0.499)
ZTF18abiybfq: z=0.0320
(x_1,c,χ^2)=(-0.09,0.30,0.543)
ZTF18abaxlpi: z=0.0620
(x_1,c,χ^2)=(0.58,0.10,0.103)
ZTF18abcysdx: z=0.0660
(x_1,c,χ^2)=(0.97,0.25,0.41
model limits
initial mjd_max
ZTF_g
ZTF_r
AB mag
Δ mag
MJD



FP(bot) light-curves

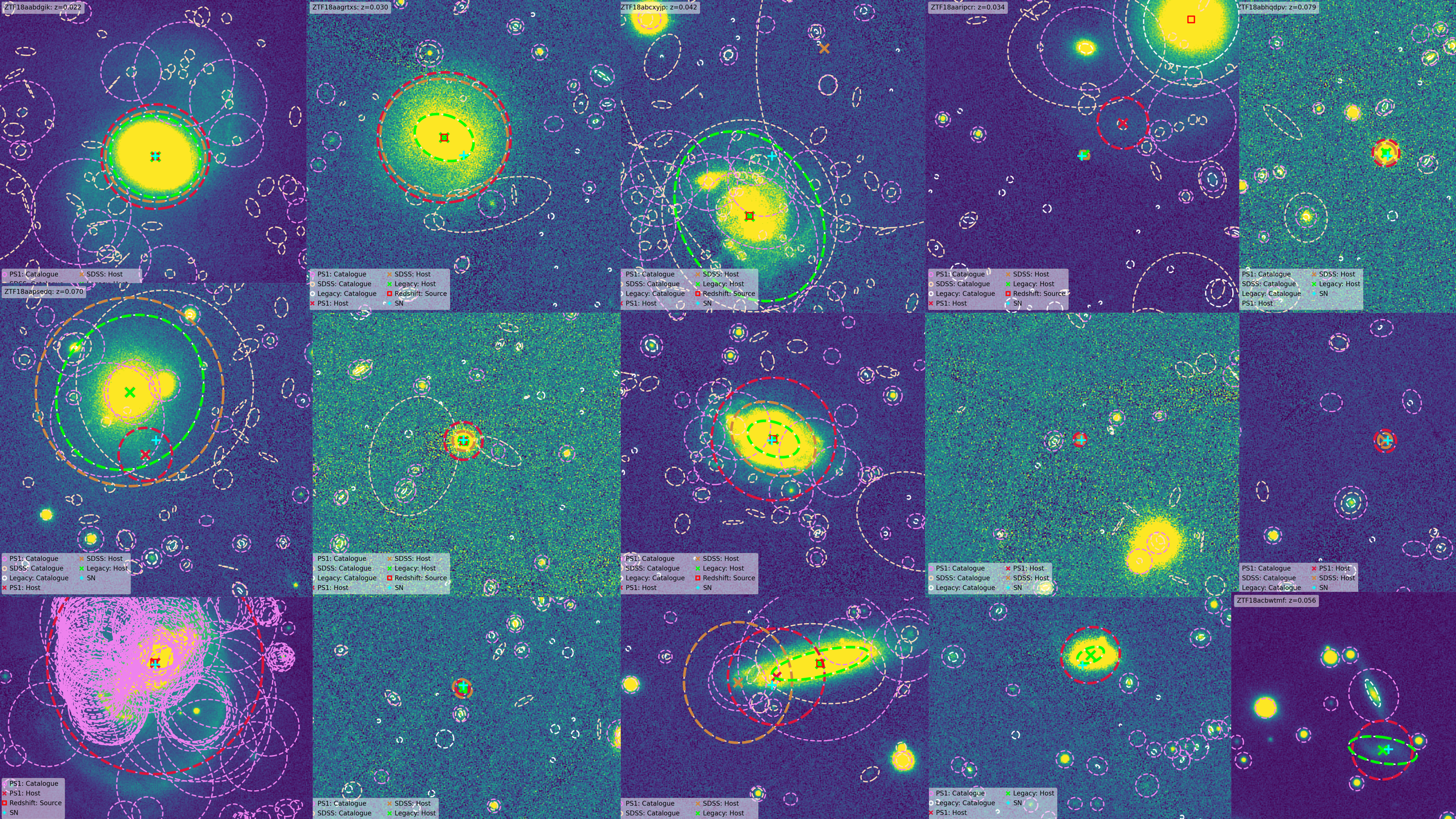
Baseline Corrected

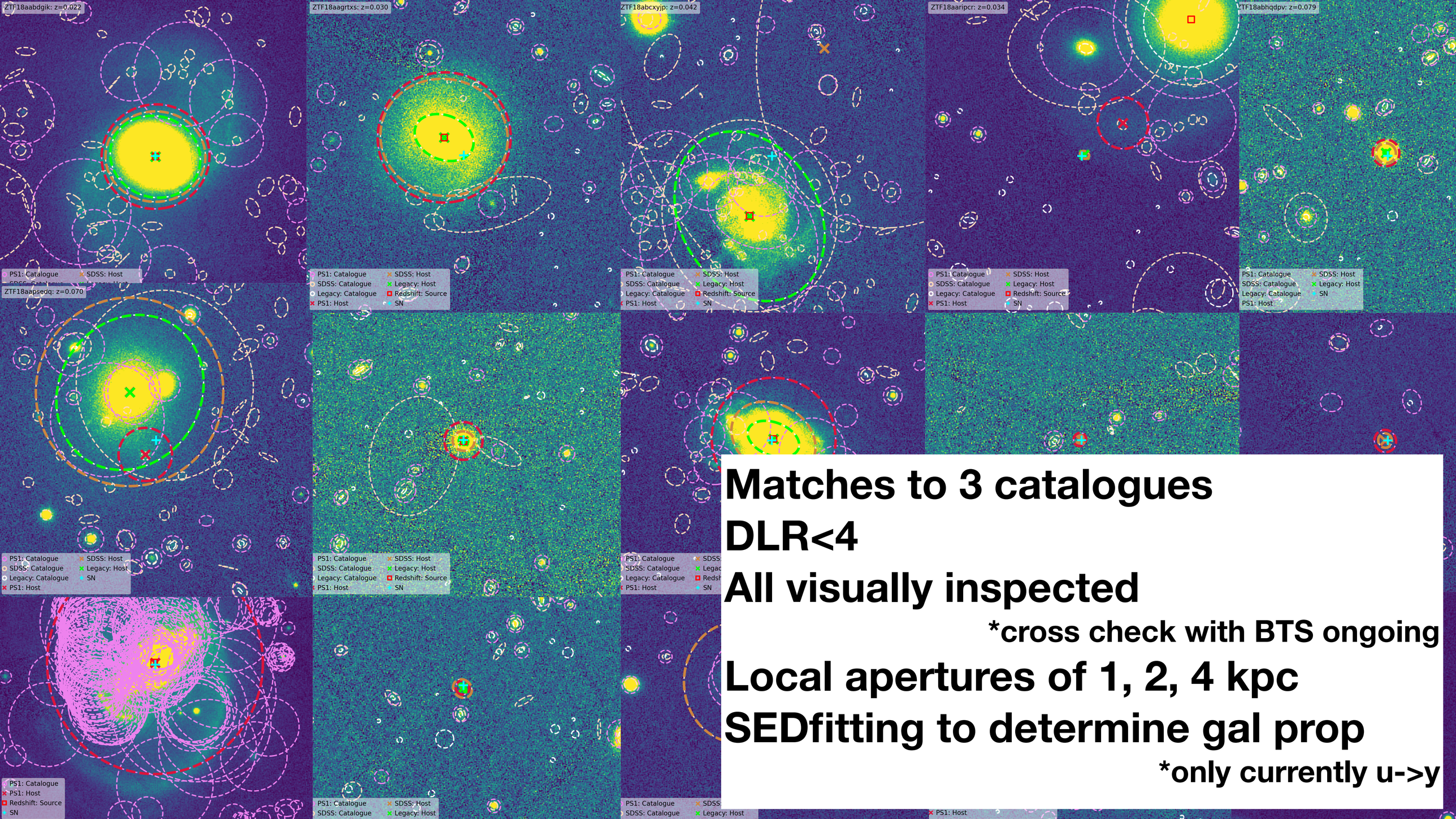
***not yet field dependent**

***not ZP corrected**

Additional ‘intrinsic’ err included

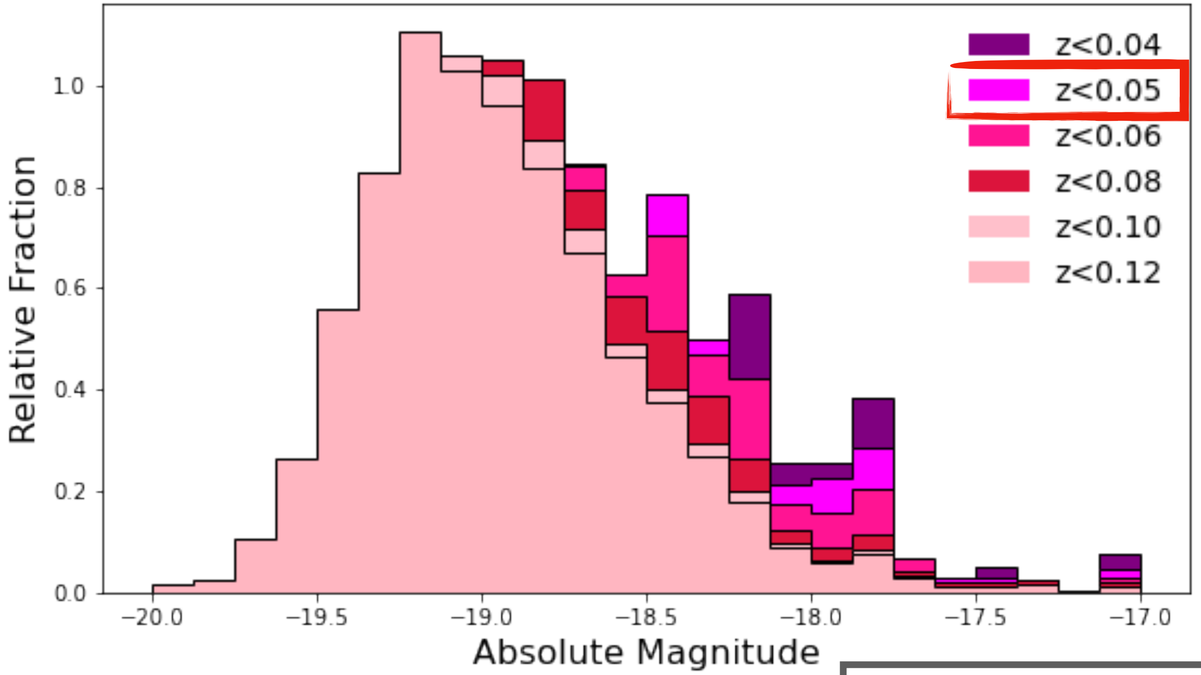
Fits are to g + r only

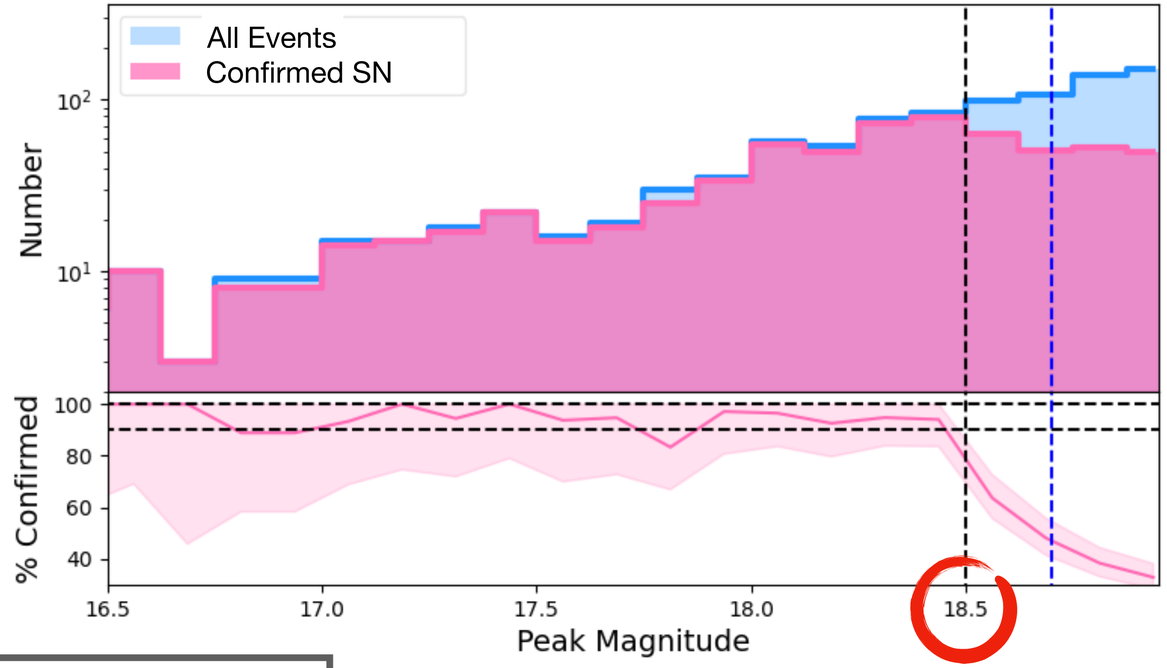

ZTF18aabdgik: z=0.022
ZTF18aagrtxs: z=0.030
ZTF18abcxyjp: z=0.042
ZTF18aaripcr: z=0.034
ZTF18abhqdpv: z=0.079
ZTF18aapsedq: z=0.070
ZTF18acbwtmf: z=0.056
PS1: Catalogue
SDSS: Catalogue
Legacy: Catalogue
PS1: Host
SDSS: Host
Legacy: Host
Redshift: Source
SN


ZTF18aabdgik: z=0.022
ZTF18aagrtxs: z=0.030
ZTF18abcxyjp: z=0.042
ZTF18aaripcr: z=0.034
ZTF18abhqdpv: z=0.079
ZTF18aapsedq: z=0.070
PS1: Catalogue
SDSS: Host
SDSS: Catalogue
Legacy: Host
Legacy: Catalogue
Redshift: Source
PS1: Host
SN
Matches to 3 catalogues
DLR<4
All visually inspected
*cross check with BTS ongoing
Local apertures of 1, 2, 4 kpc
SEDfitting to determine gal prop
*only currently u->y

Completeness

DR2





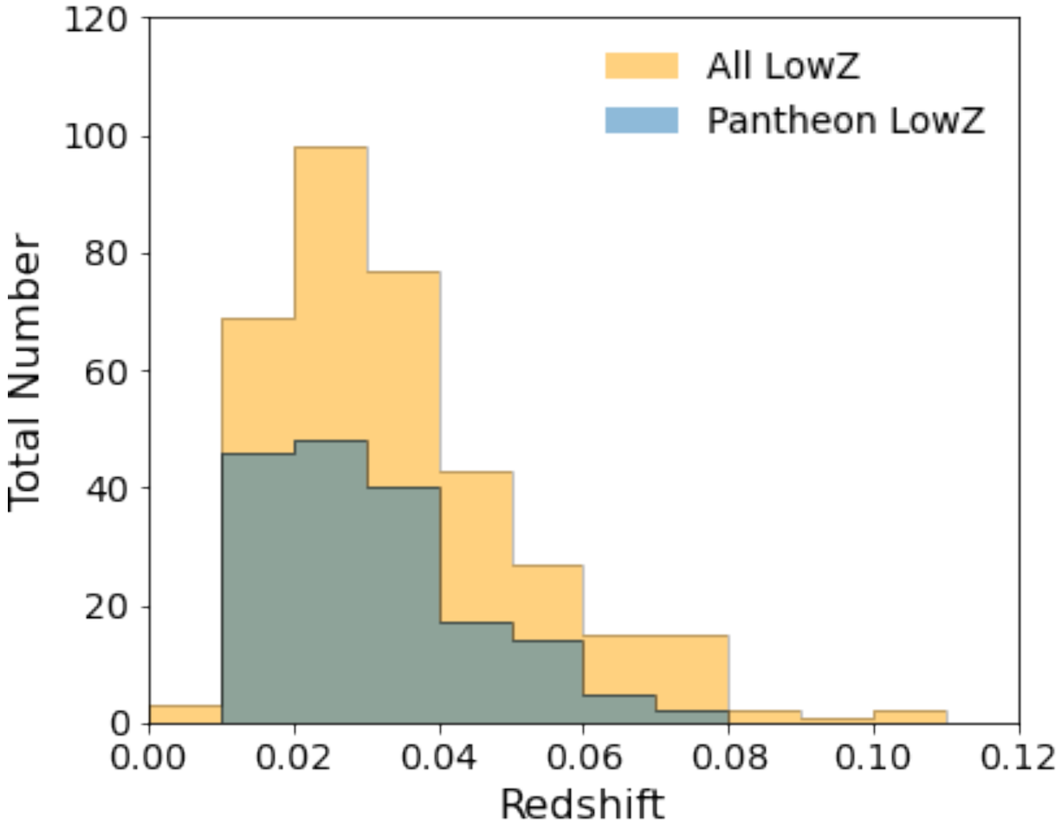
ZTF1: Complete to m=18.5
=> z~0.05

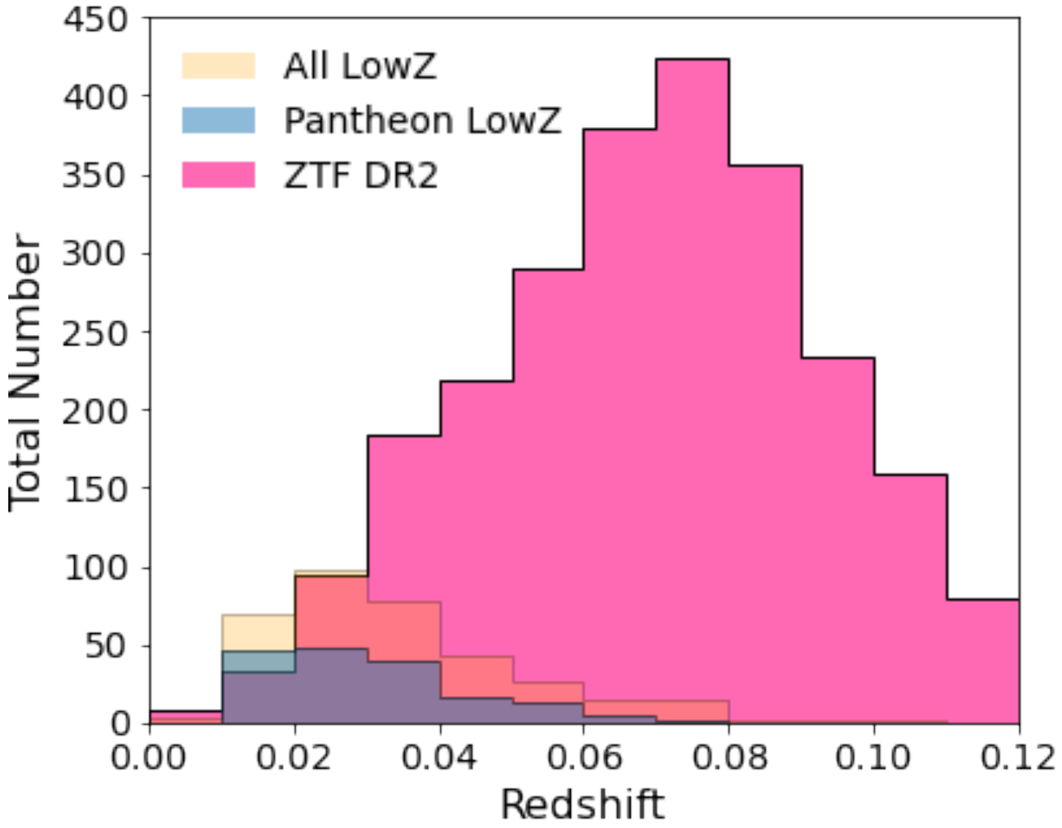
Whole Sample:
2624 Cosmological SN;
923 with a spec_z

'Complete' Sample:
539 Cosmological SN;
306 with a spec_z

Data Size

DR2





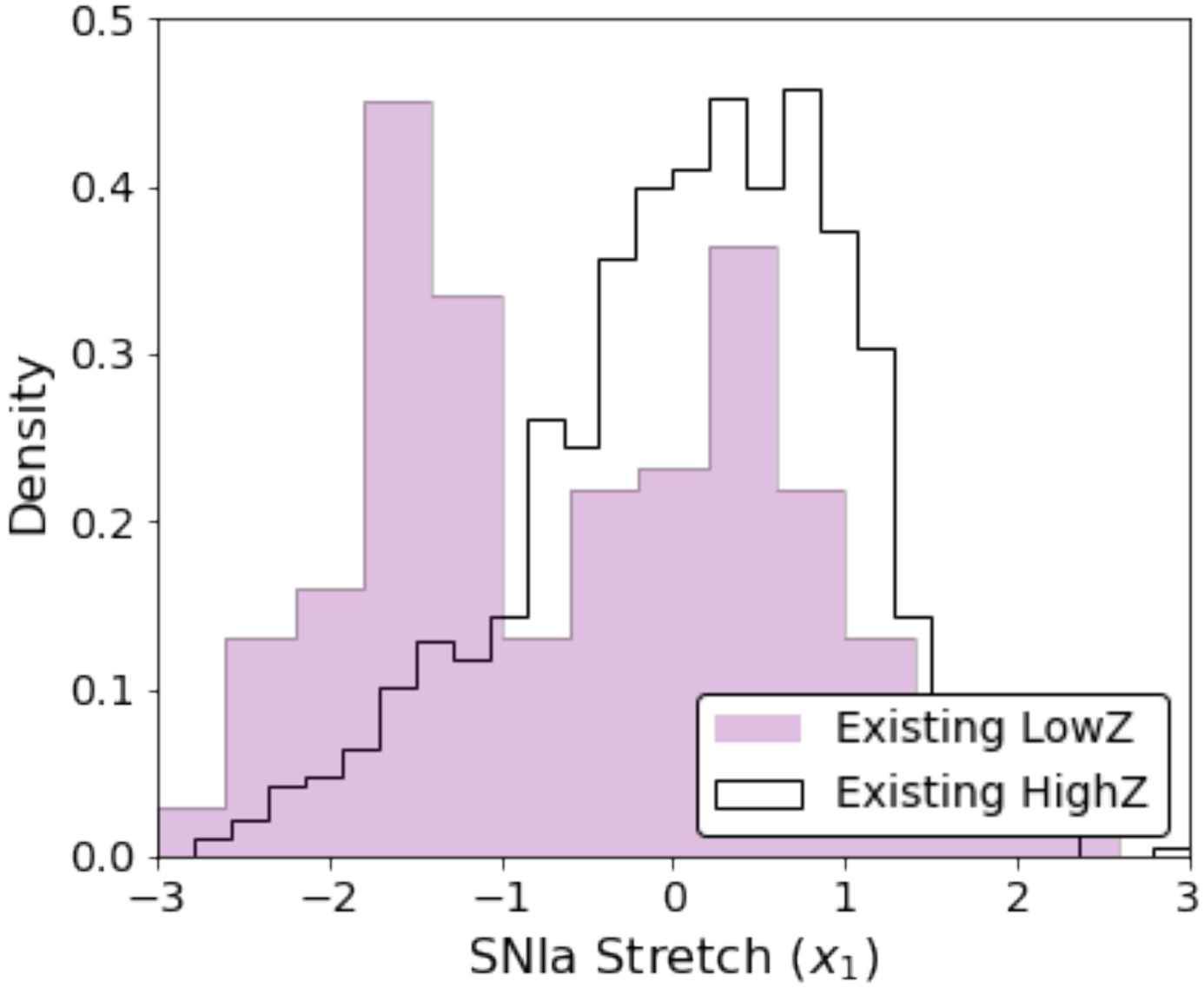
Pre-ZTF:
172 Cosmological SN;
352 over all datasets

ZTF DR2:
352 => 2624;*
*172 => 923**

* *today == end ZTF1*

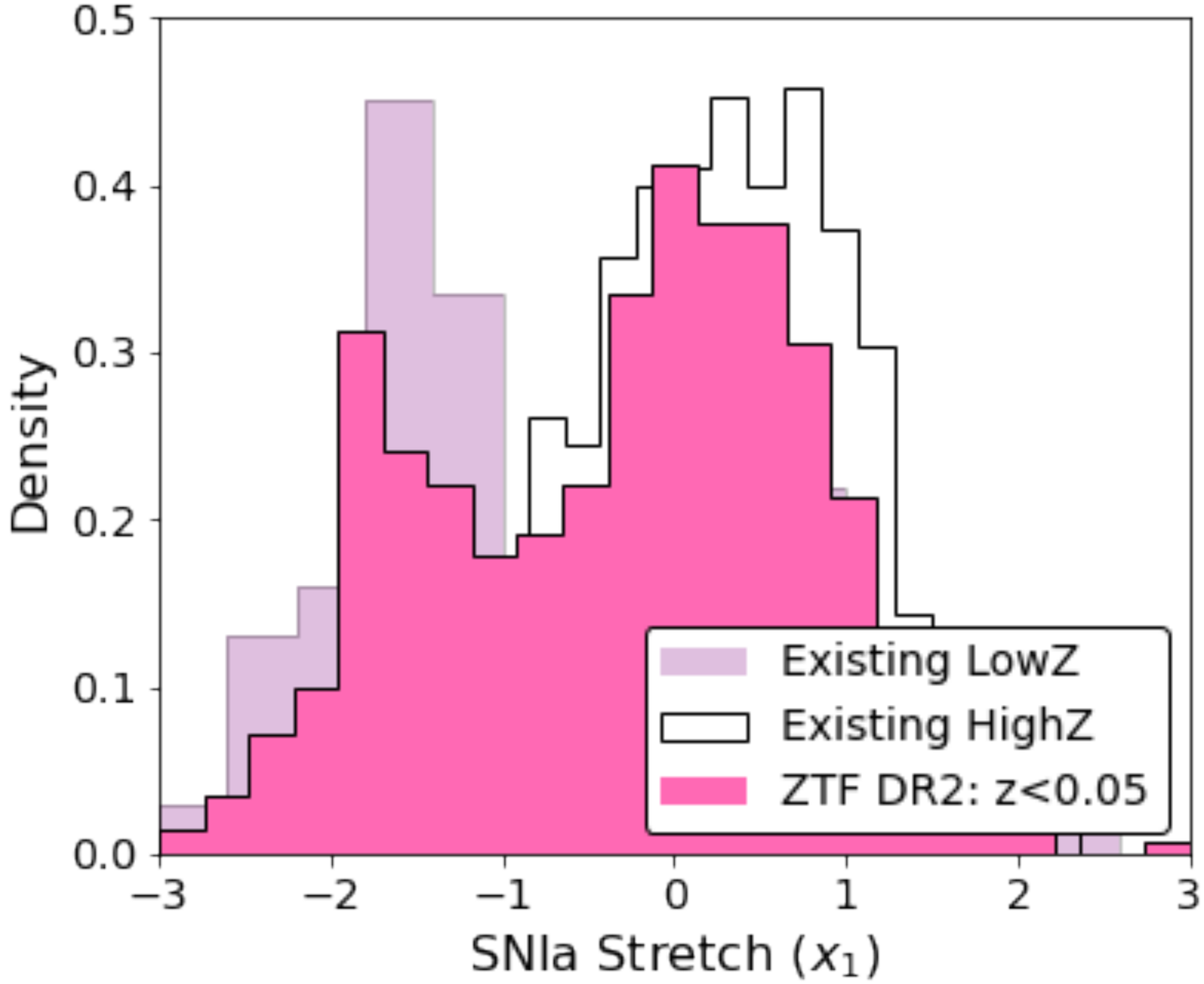
Answering Questions

DR2



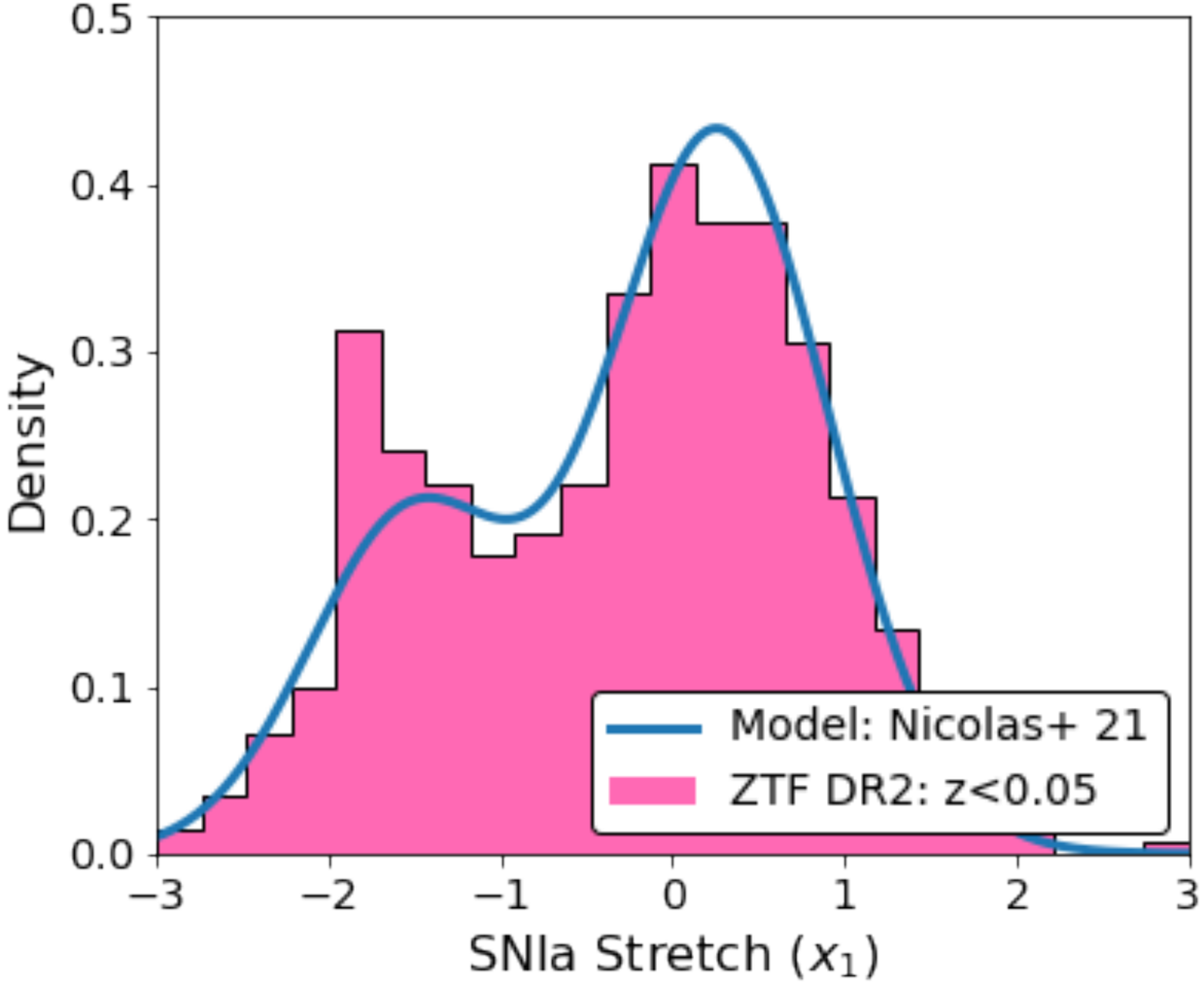
Stretch Distribution

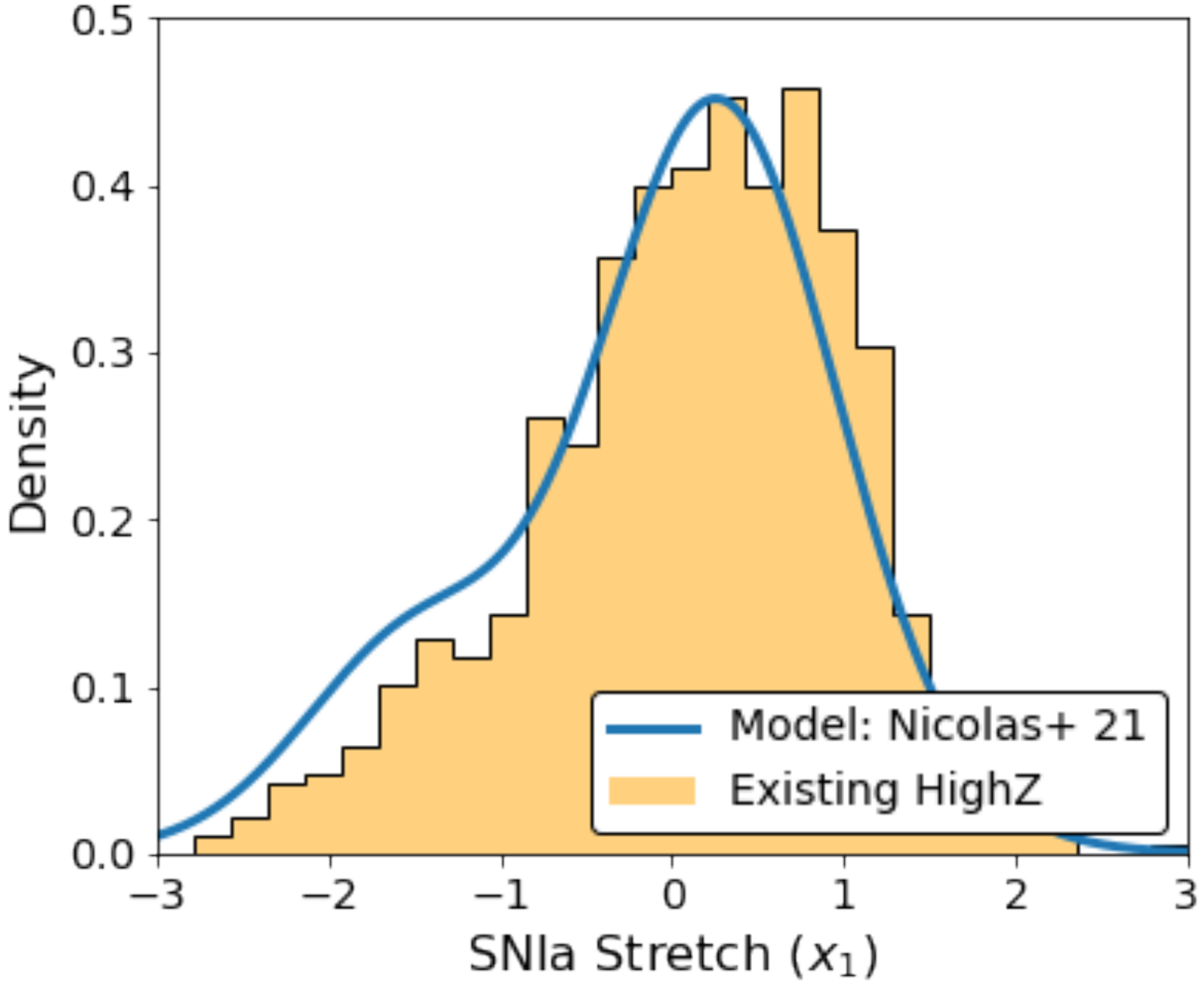
DR2



Testing Models

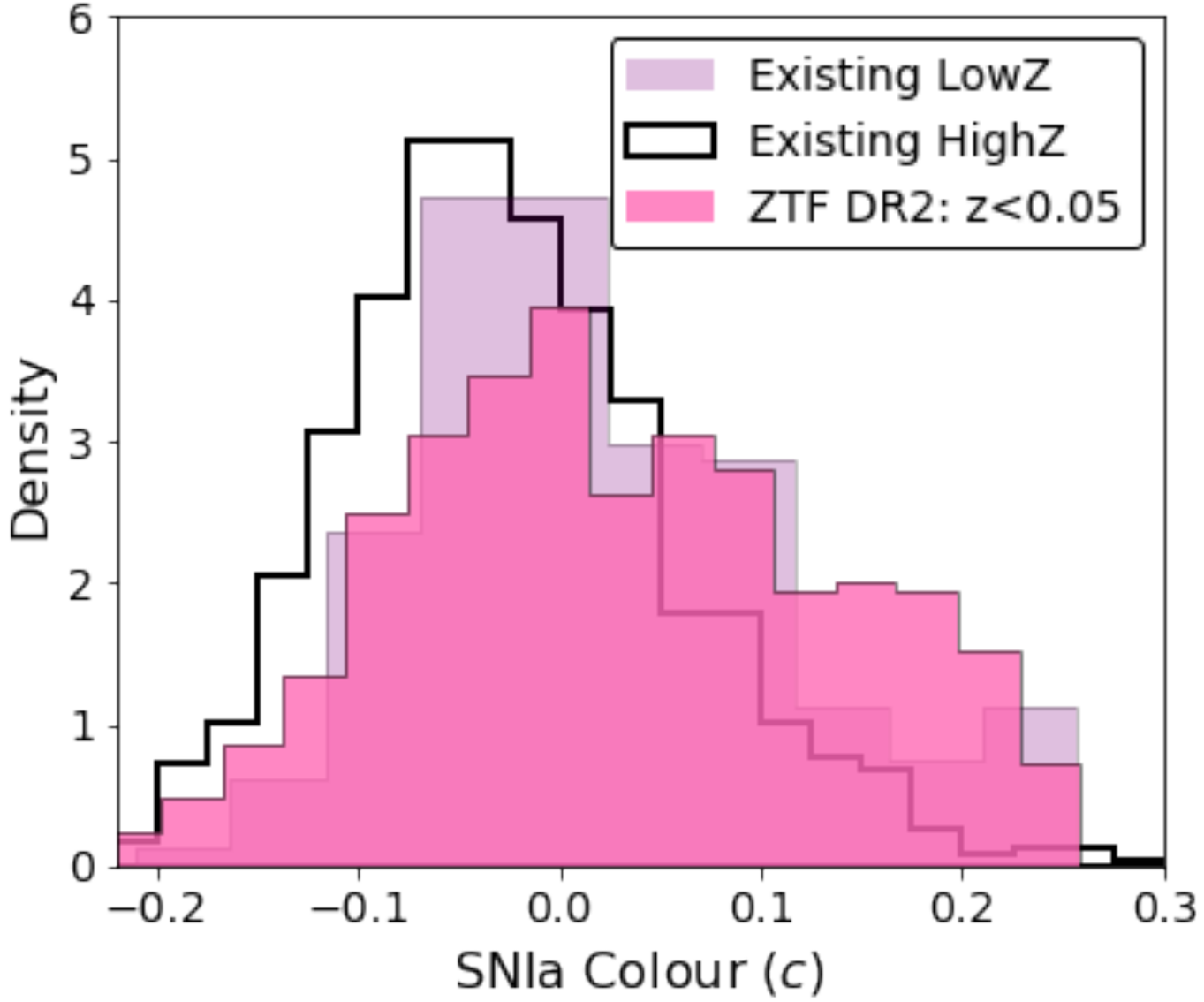
DR2





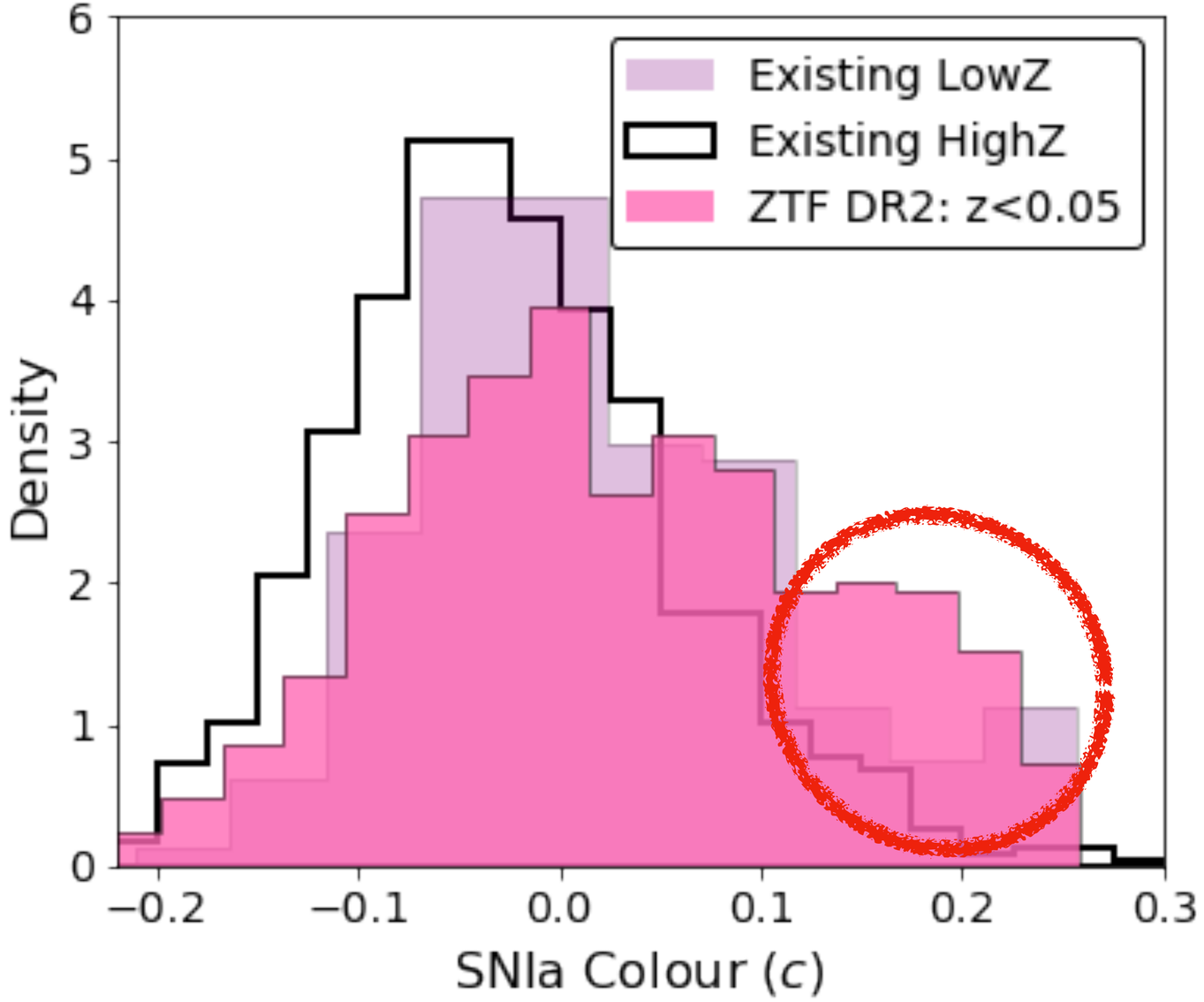
Concerning Colour

DR2



Concerning Colour

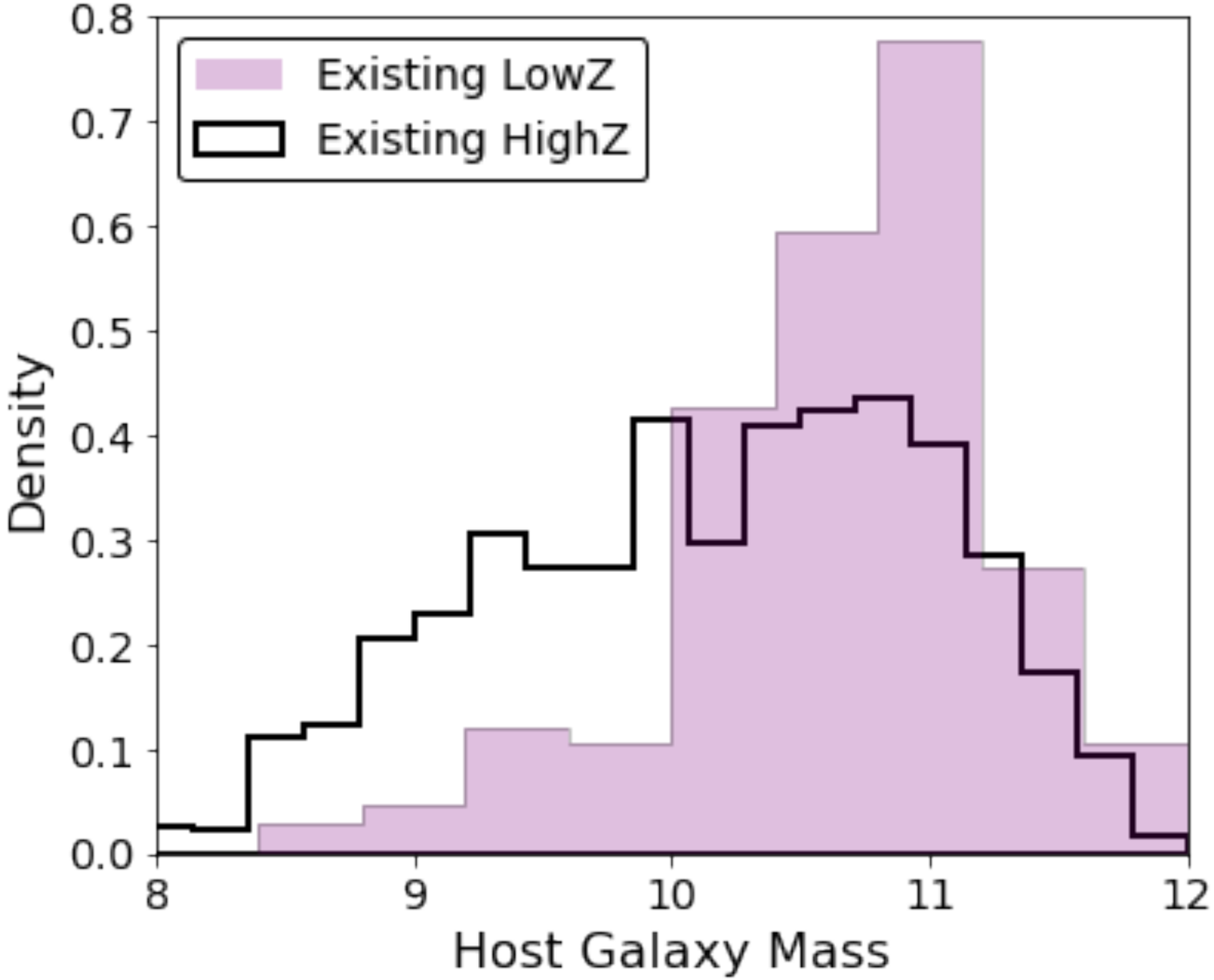
DR2



Real or calibration?
Tests ongoing

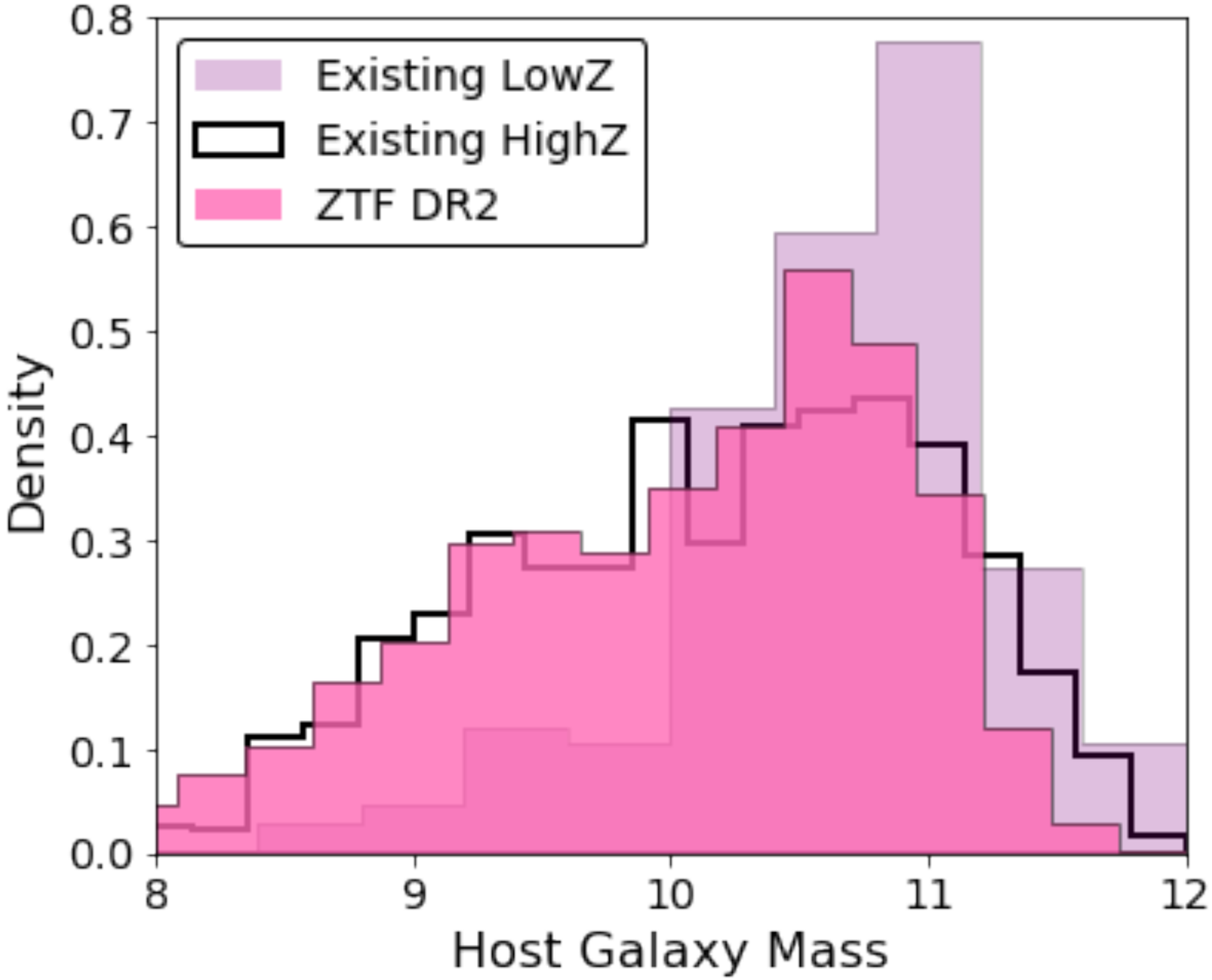
Environmental Dependence

DR2



Environmental Dependence

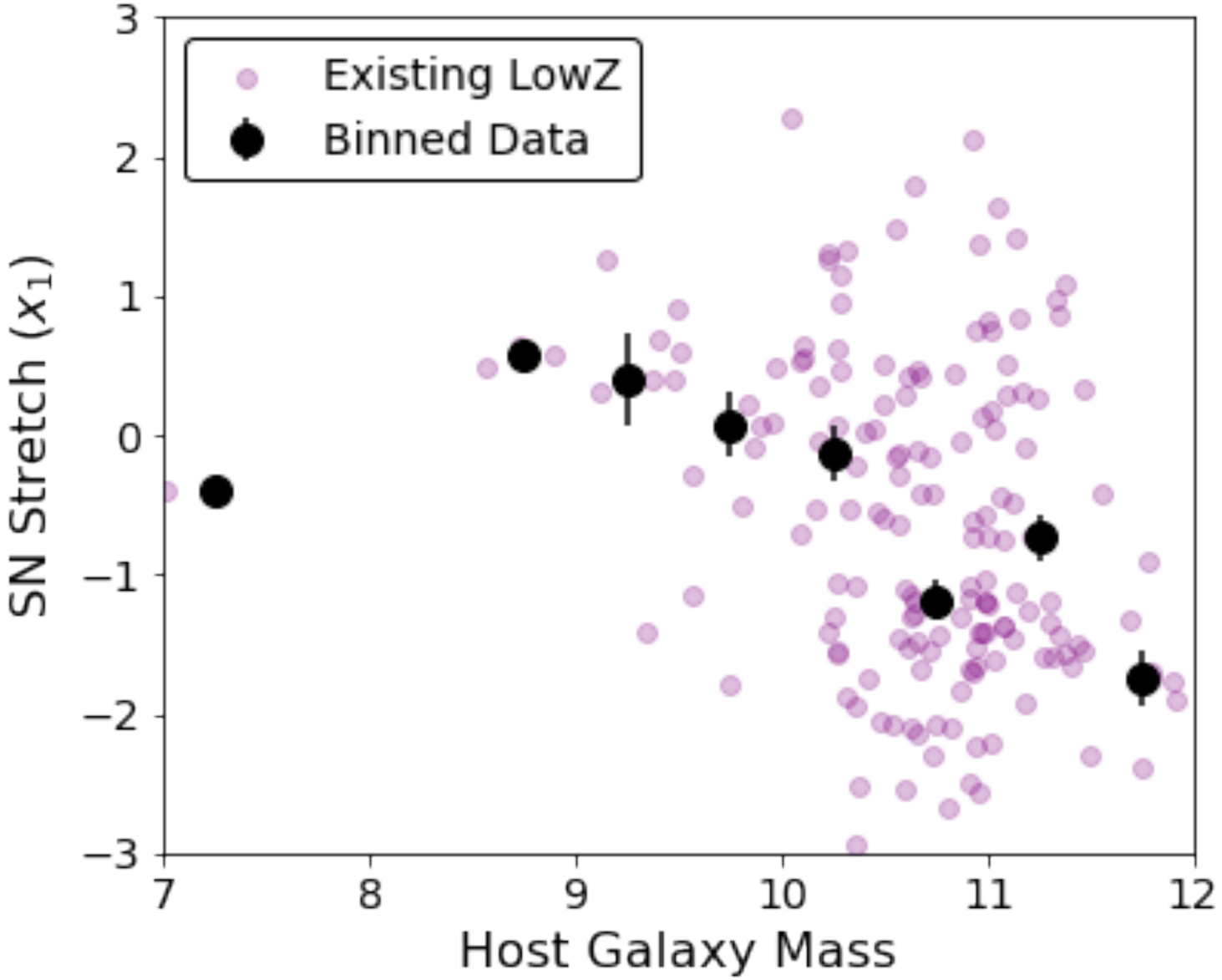
DR2



See also sSFR, local colour, …

Environmental Correlations

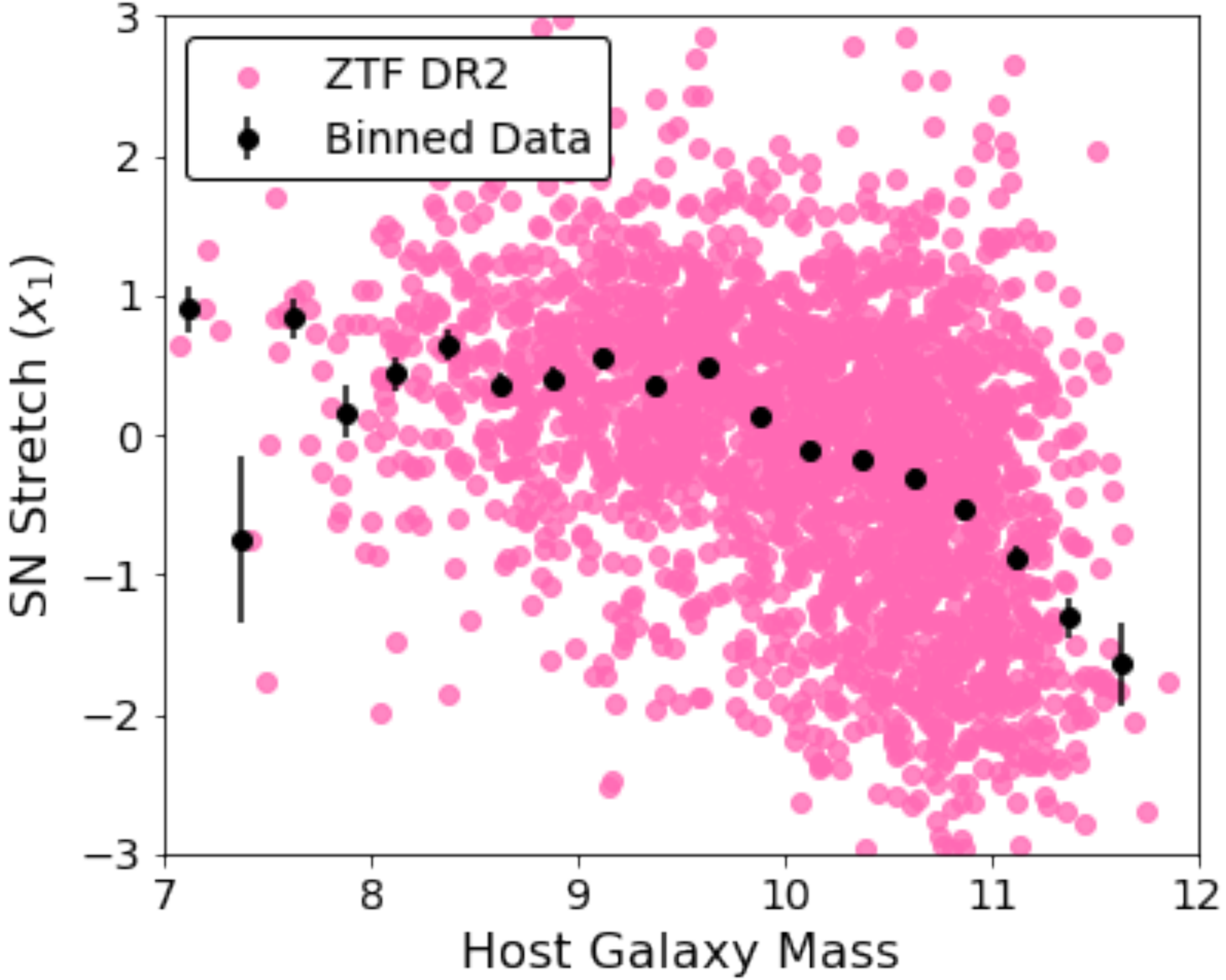
DR2



See also sSFR, local colour, …

Environmental Correlations

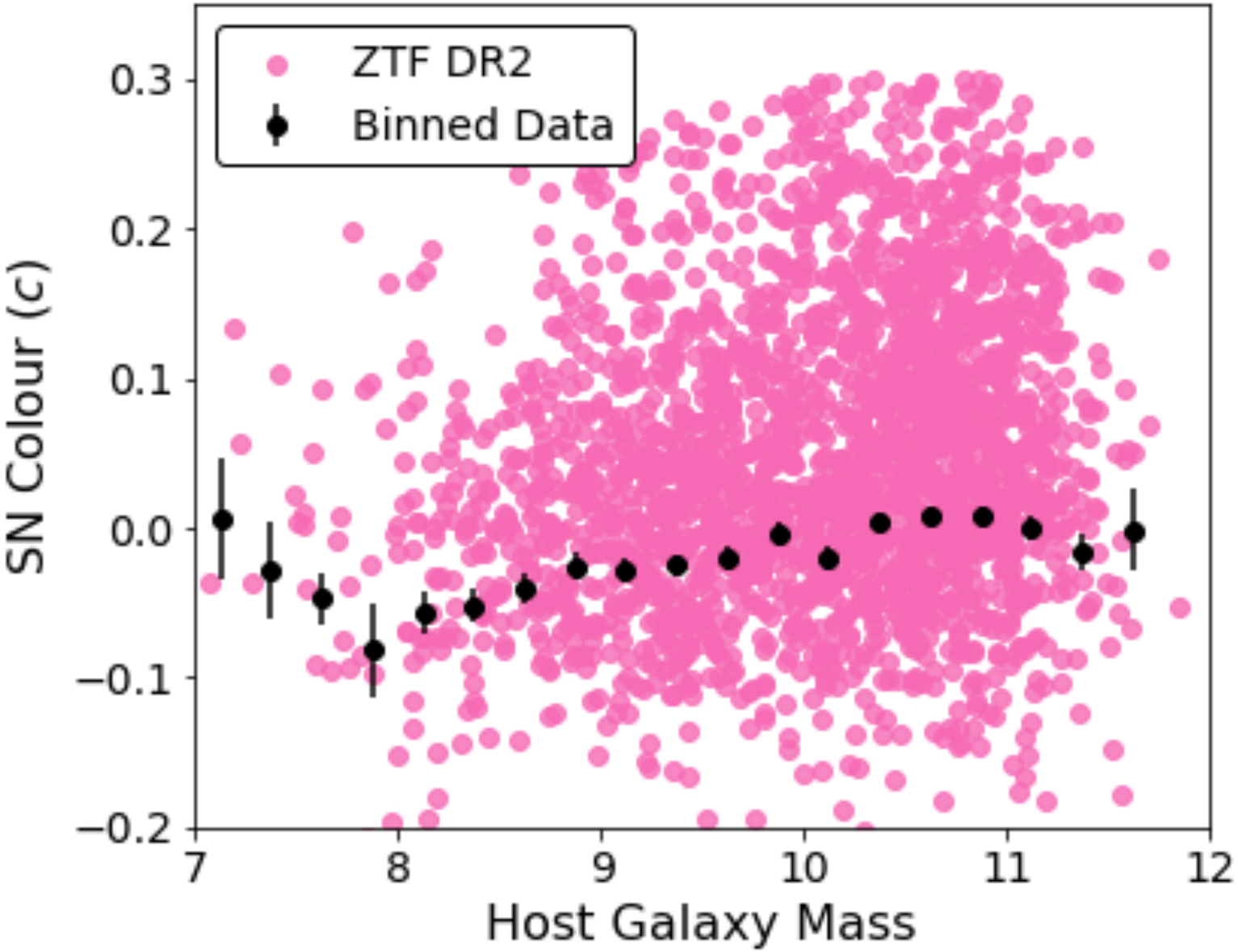
DR2



See also sSFR, local colour, …

Environmental Correlations

DR2

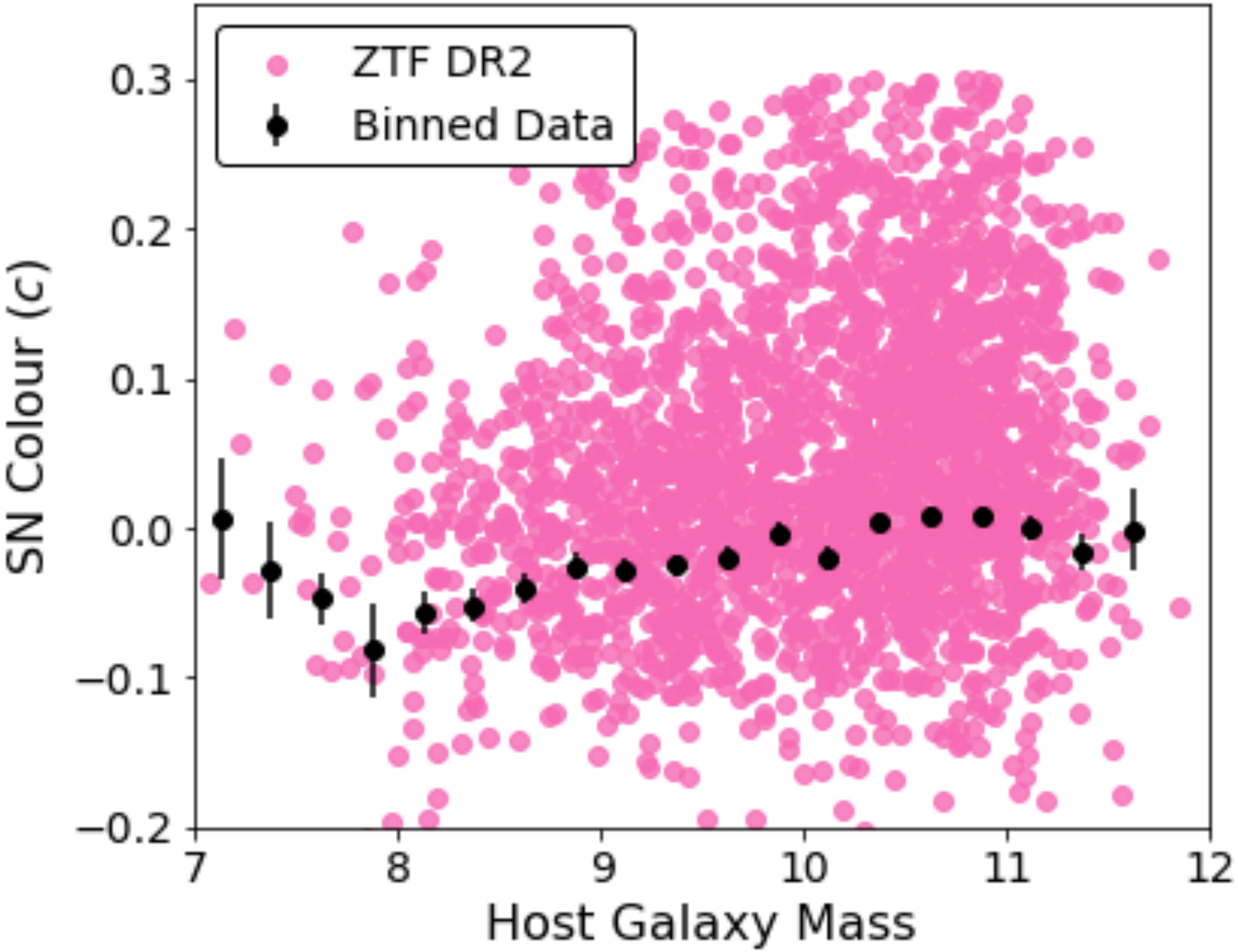


See also sSFR, local colour, …

Next up naive HR's

Environmental Correlations

DR2



See also sSFR, local colour, …

Next up naive HR's

A sneak peek

DR2

SORRY . . .

The “To do” List:

A. Finalise spec confirmed list (Jeremy + Joel + Trinity: not *really* me!)
B. Finalise light-curves (close :))
C. Finalise redshifts (cross check with BTS done; Gal_z from SN_spec?)
D. Finalise host selection (cross check with BTS done)
E. Finalise SALT2 cuts (basically done!)

} ‘Dec’

1. Finalise Volume Limited Sample (Melissa + BTS)
2. Check consistency of derived properties (global + local)
3. Calculate HRs (UNITY+fixed cosmology on Volume Limited Sample)
   - Understand scatter ;)
4. Local v Global
5. Optimise models (N21 + BS21)

} ‘Jan’ -> ‘Mar’

+ write it down!

Merci / Gracias / Thank you :)

Also dankeschon, tack and go rabid maith agat ;)