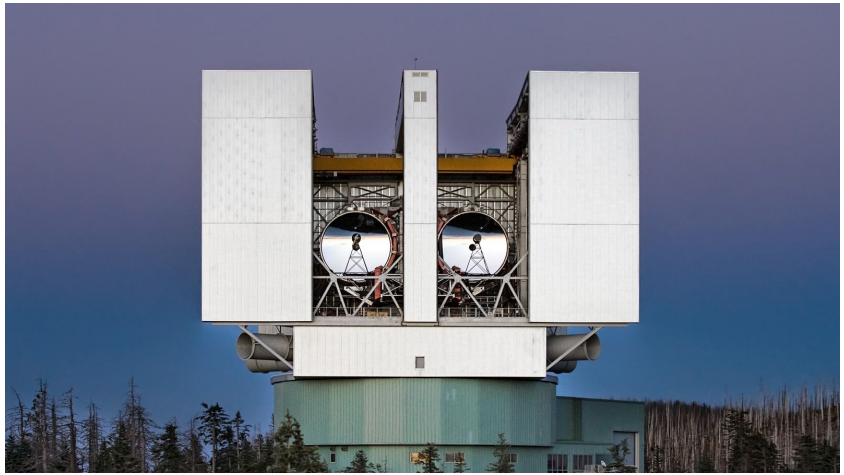
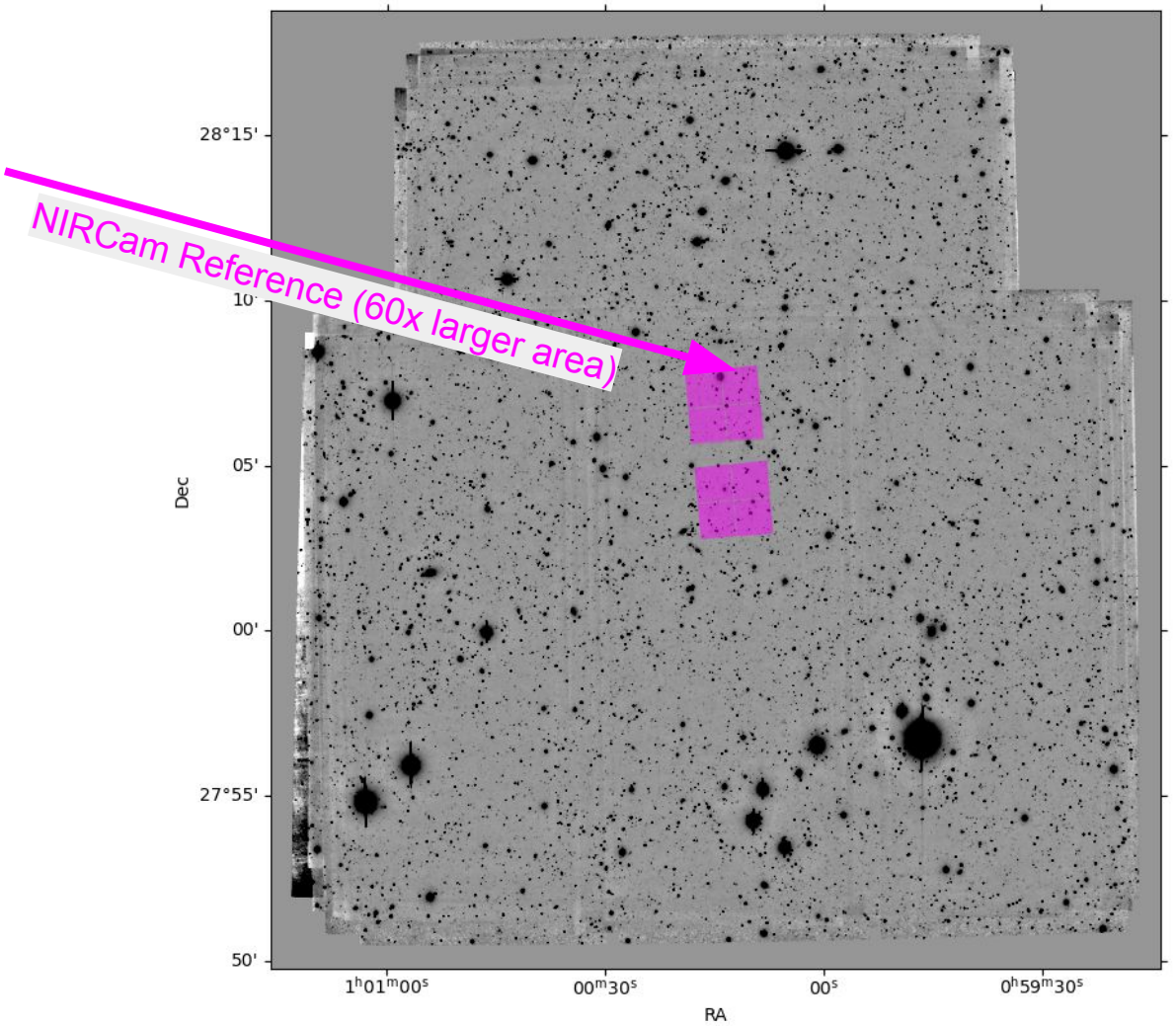
Lyman Break Galaxies at z~6 With LBT and MMT!



LBT/LBC

~ 25 x 23 sq. arcmin, FoV
≈ 60 x 55 cMpc at z~6
≈ 8.8 x 8 pMpc at z~6



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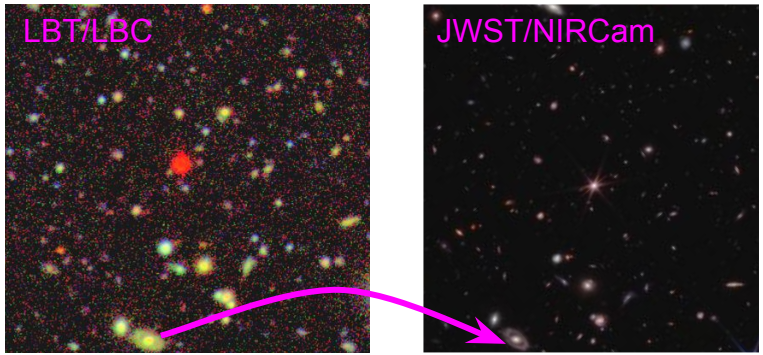
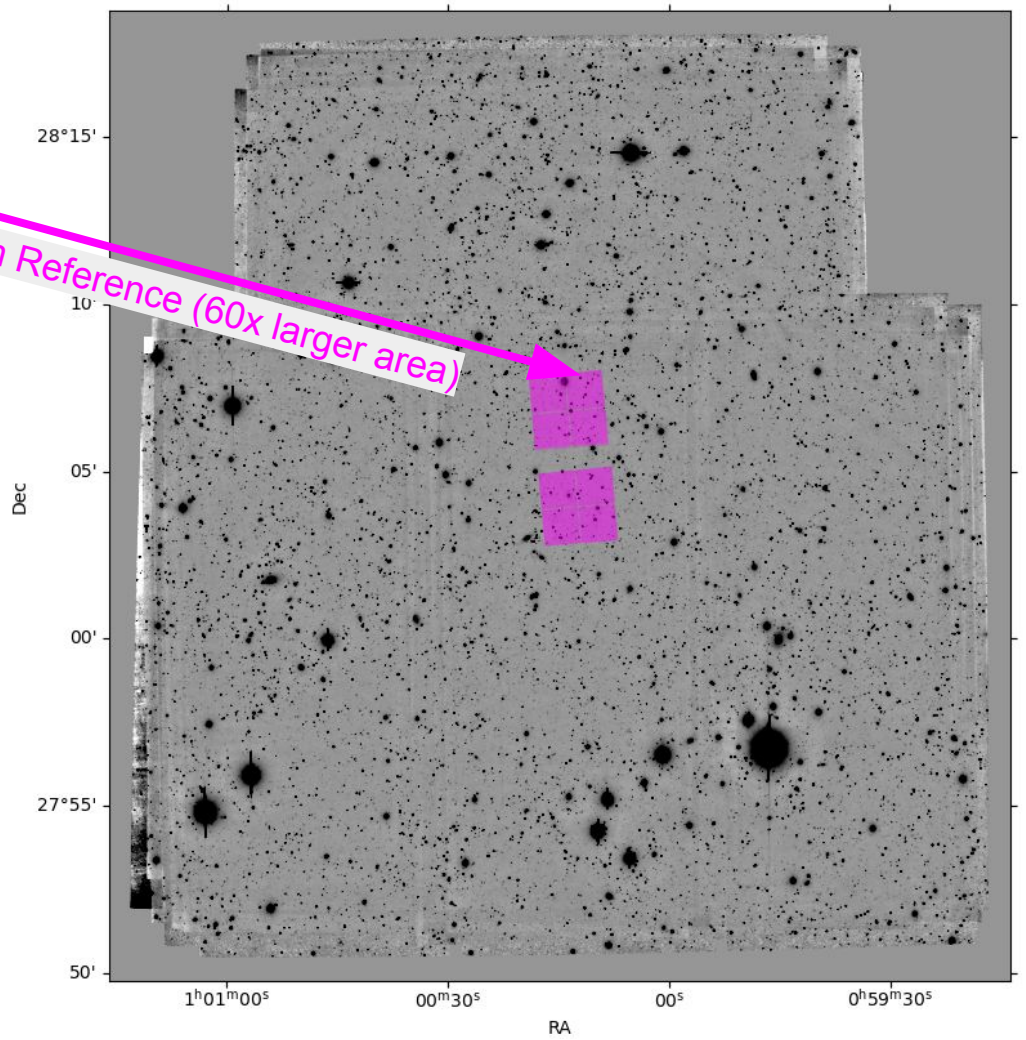
0.224 “/px pixel scale



Still pretty good at separating galaxies!



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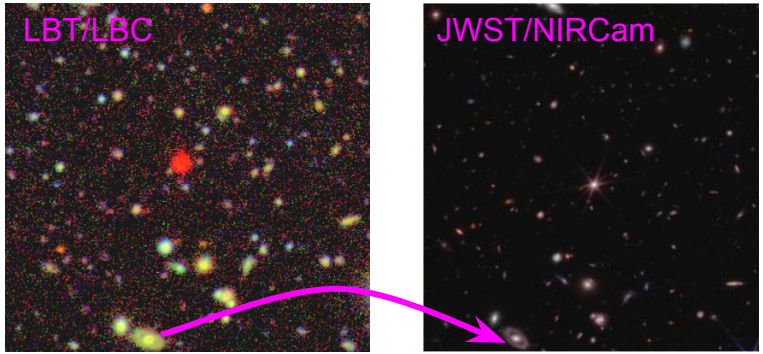

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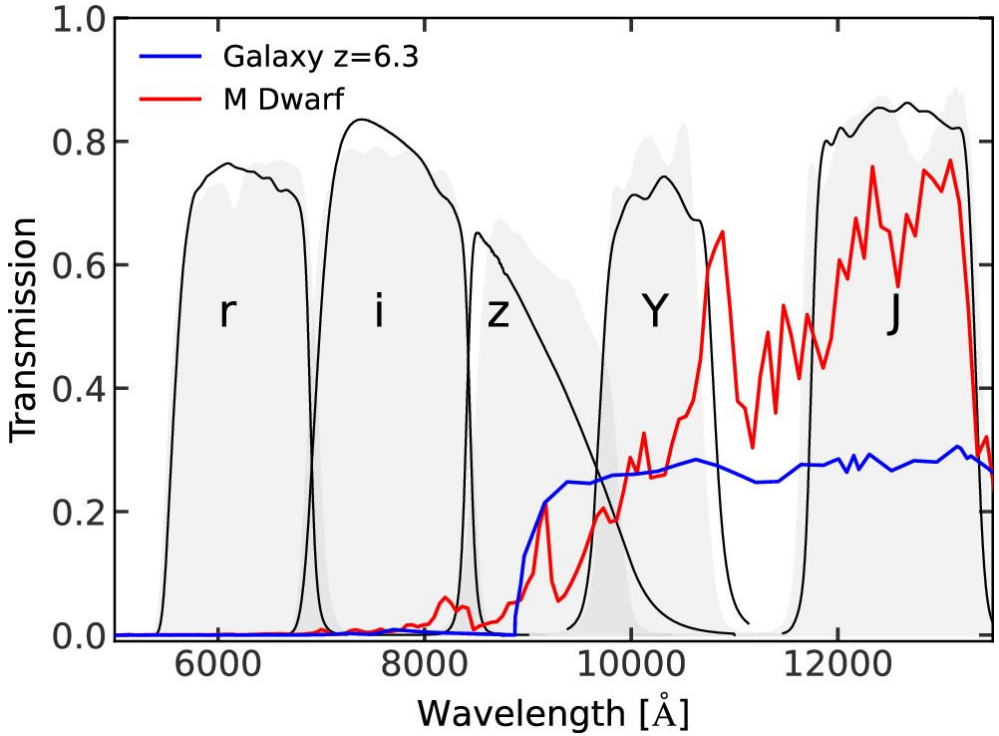
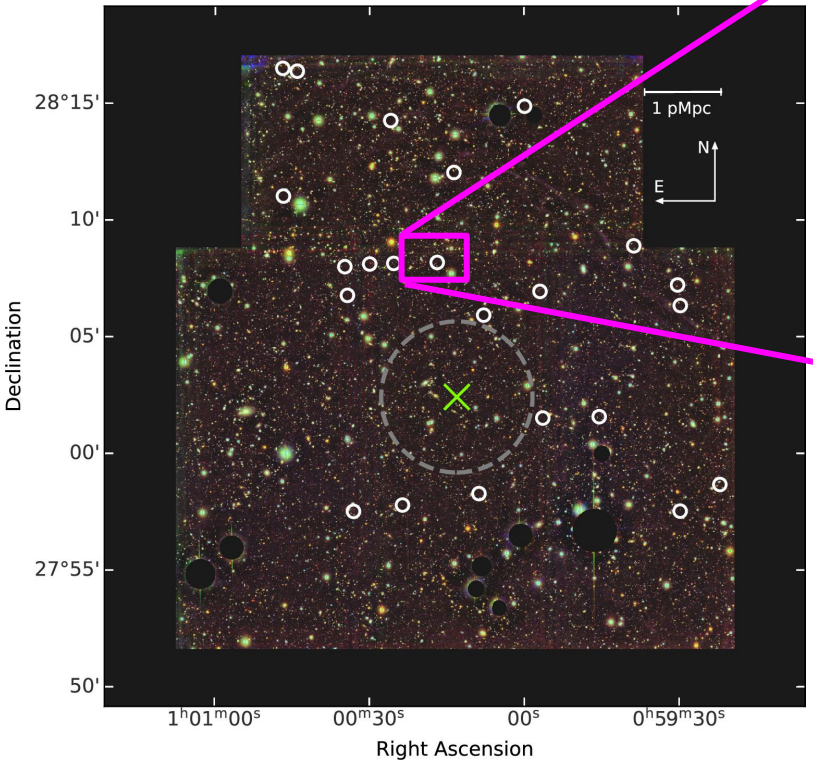


Dropout Filters for z~4 (g) , z~5 (r), z~6.5 (i)

LBC-Blue	SDT_Uspec	U-BESSEL	B-BESSEL	V-BESSEL	g-SLOAN	r-SLOAN				
LBC-Red	V-BESSEL	R-BESSEL	I-BESSEL	r-SLOAN	i-SLOAN	z-SLOAN	Y-FAN	F970N20	TiO_784	CN_817

LBGs with LBT/LBC!

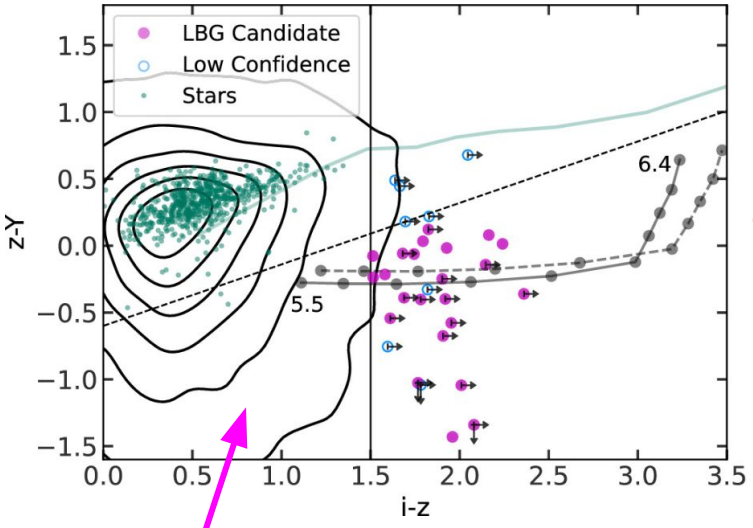


yes, you can find them! - Check out my paper 😉

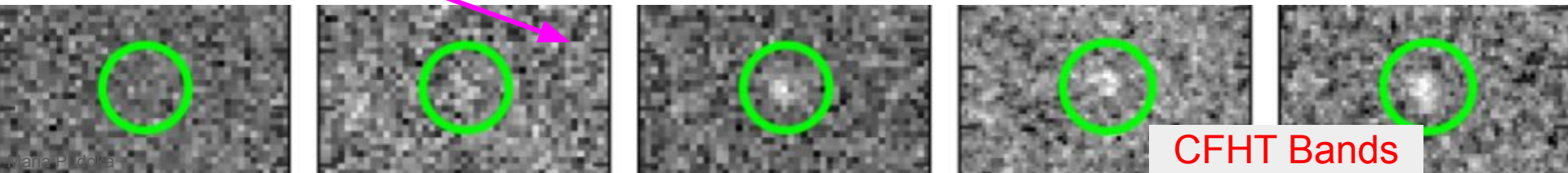
Filter	Wavelength [Å]	Exposure Time [hr]	3σ Limit [mag]
r	6200	3.7	26.55
i	7670	1.5	26.38
z	9608	2.1	25.79

With Few **Hour Exposure** Time = Probing Bright Galaxies

Science with LBT/LBC!

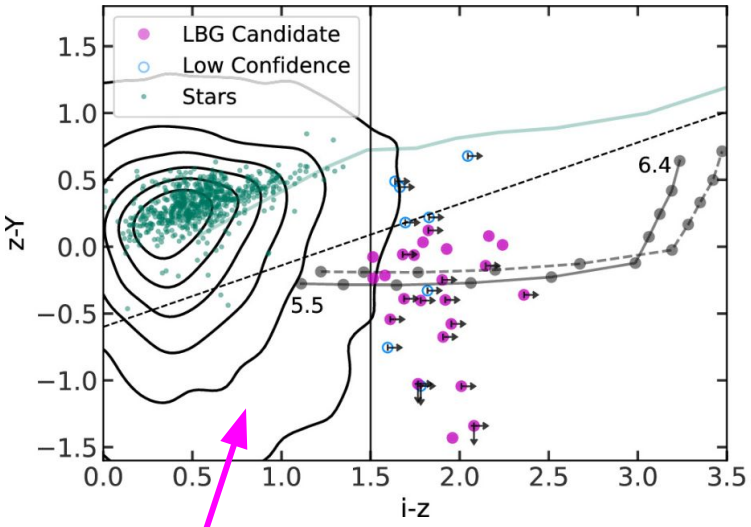


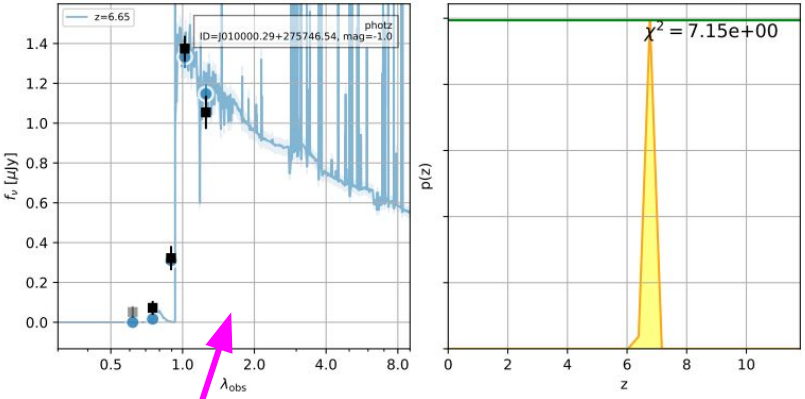
Color/Dropout Selection



CFHT Bands

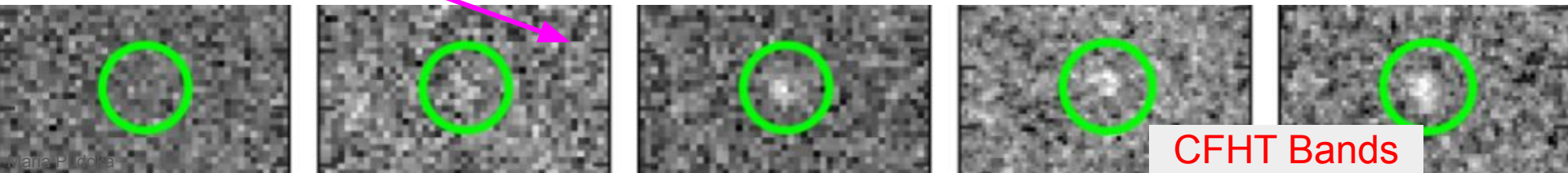
Science with LBT/LBC!





Rough SED Fitting

Color/Dropout Selection



CFHT Bands

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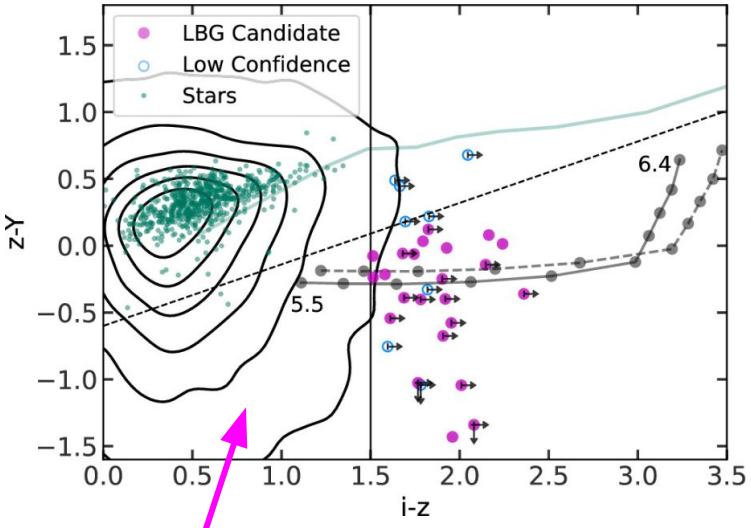

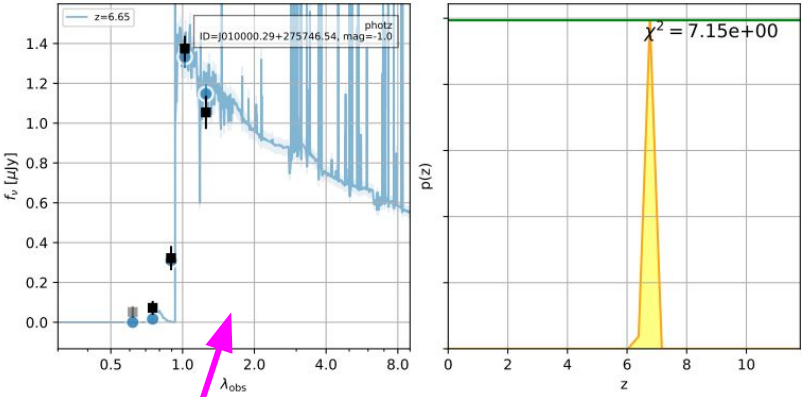

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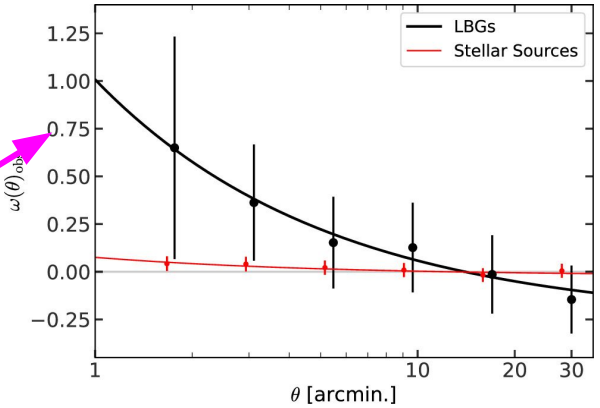
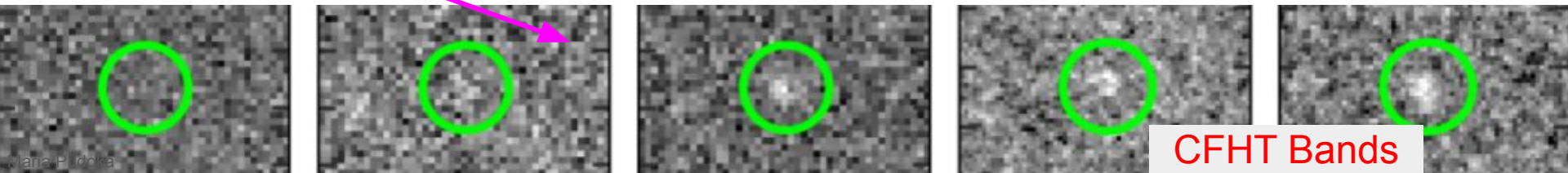


Spatial/Clustering Analysis

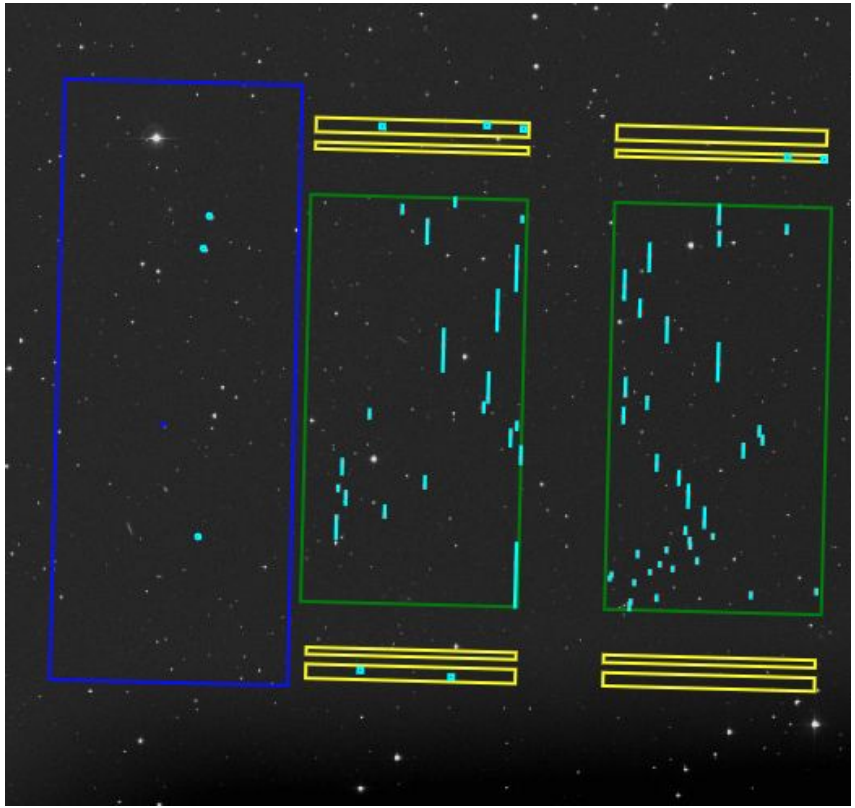
Color/Dropout Selection



CFHT Bands

MMT/Binospec

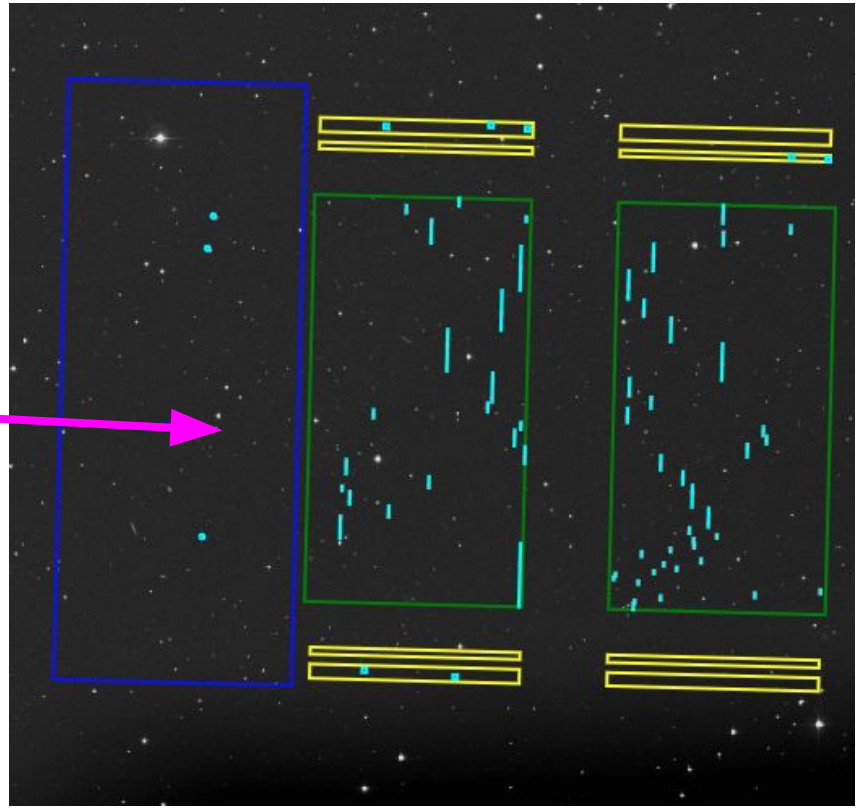
~ Two 8 x 15 sq. arcmin FoVs



MMT/Binospec

~ Two 8 x 15 sq. arcmin FoVs

Slit masks can have up to 150 targets at once!



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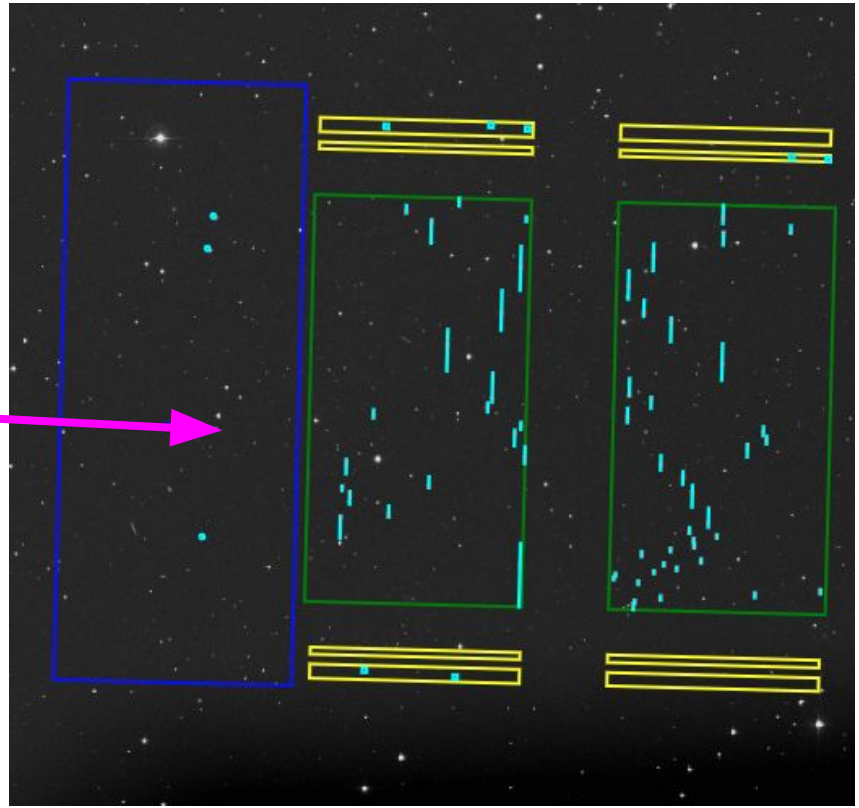


Spectral Setups

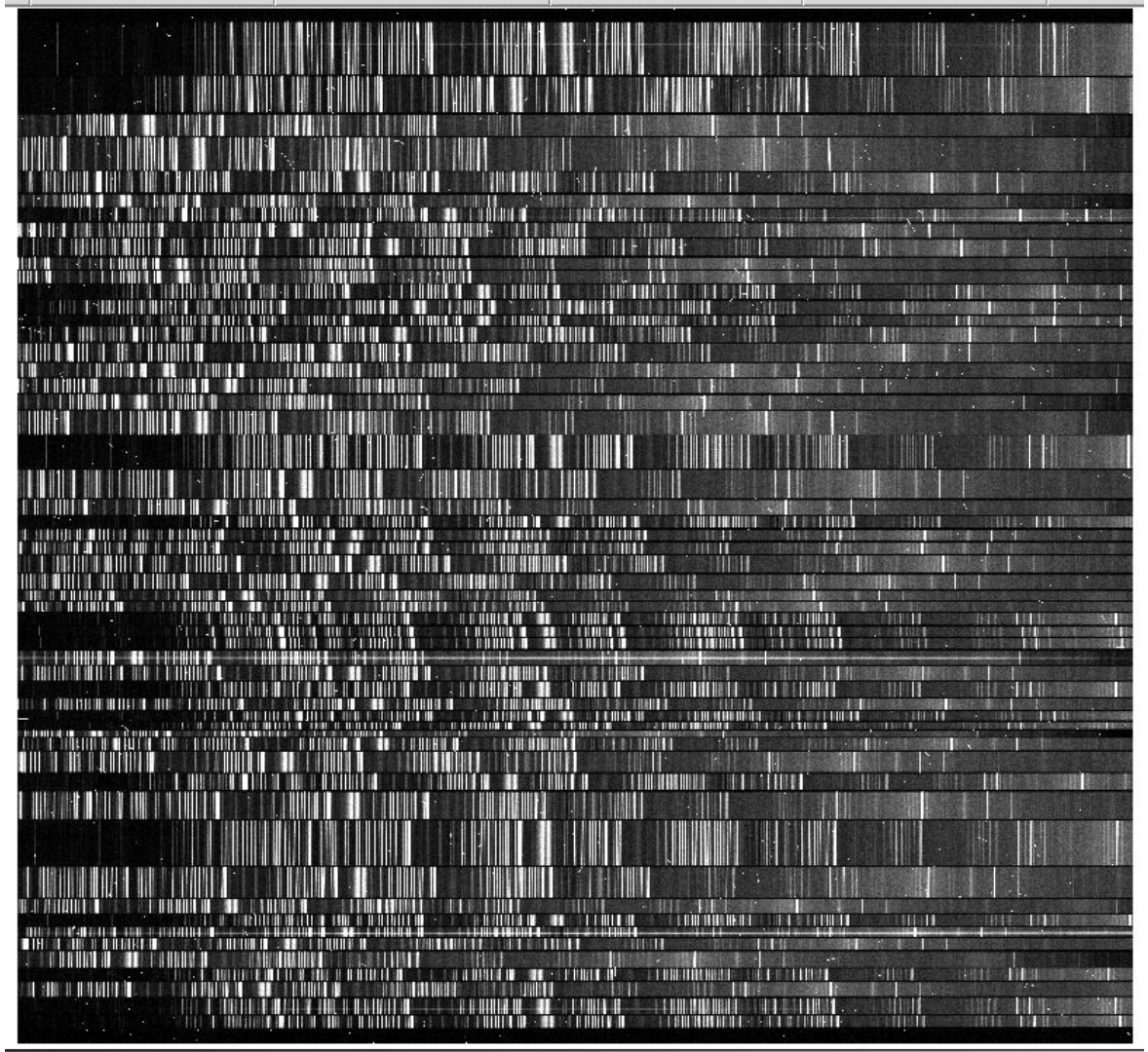
Grating lines/mm	Angle of incidence	Coverage (A)	Dispersion (A/pixel)	Pixels per 1" slit	Resolution in 1" slit
270	28.0	3900-9240	1.30	3.75	1340
600	33.2	4500-6960	0.60	3.47	2740
600	36.1	6000-8480	0.61	3.32	3590
600	38.5	7255-9750	0.61	3.20	4360
1000	37.1	3900-5400	0.36	3.27	3900

Lya and Lya-Break Coverage at $5.5 < z < 7$

MMT/Binospec

Multislit data looks like this.
…kinda scary…

Good thing there's a semi-automated, easy to use package to reduce it!



MMT/Binospec

Ryan got σ>7 detections on Lya emission for galaxies at z=6.5-7 with t_exp = 2-9 hr (multiple masks)

With just a few hours on source, you can get spec-z for ~150 galaxies.

- Protocluster membership/kinematics
- Quasar DMH mass from galaxy-quasar cross correlation functions (not just angular this time)

R ~ 4000
Δz~0.001

Endsley et al. 2021