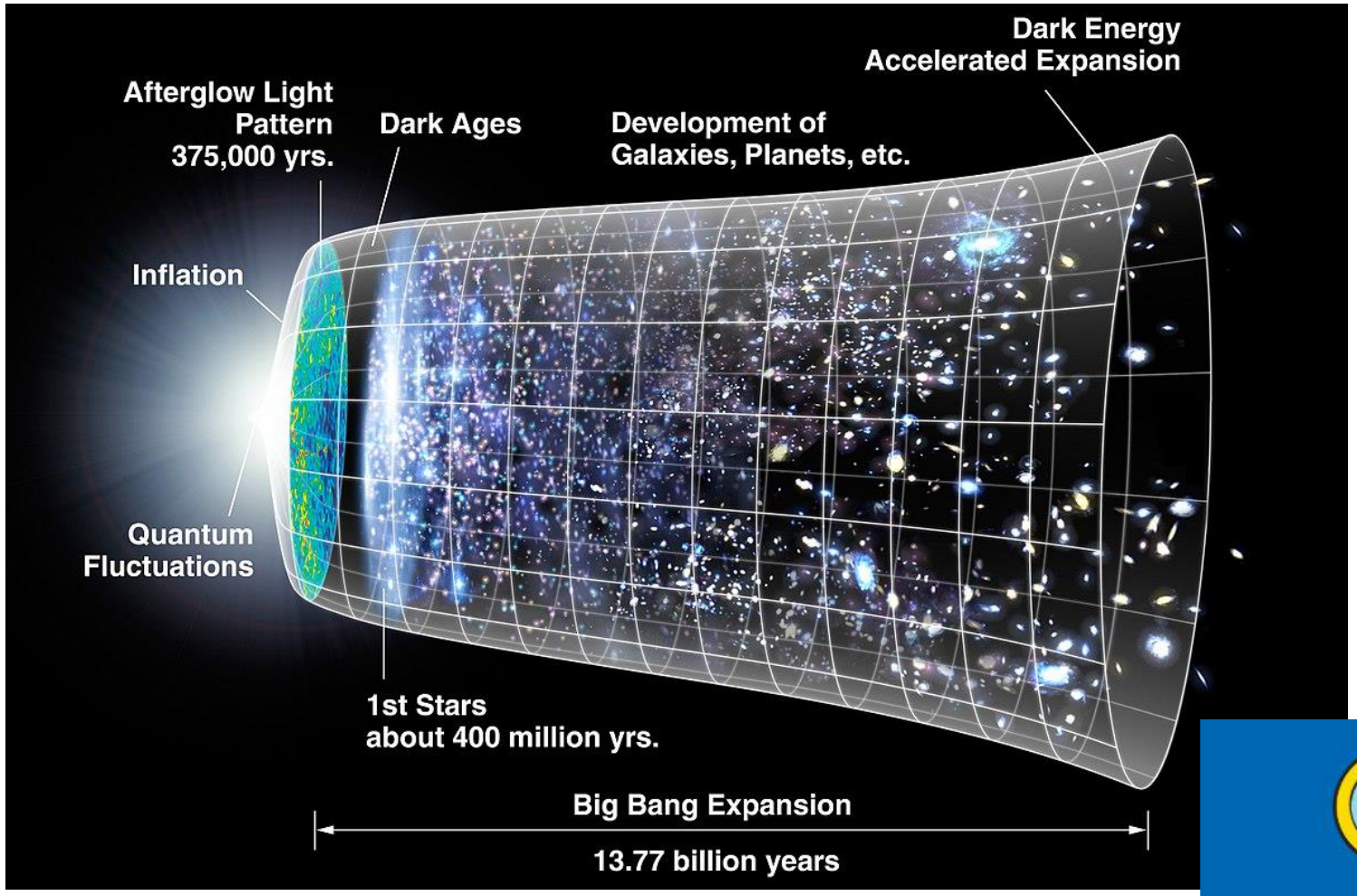
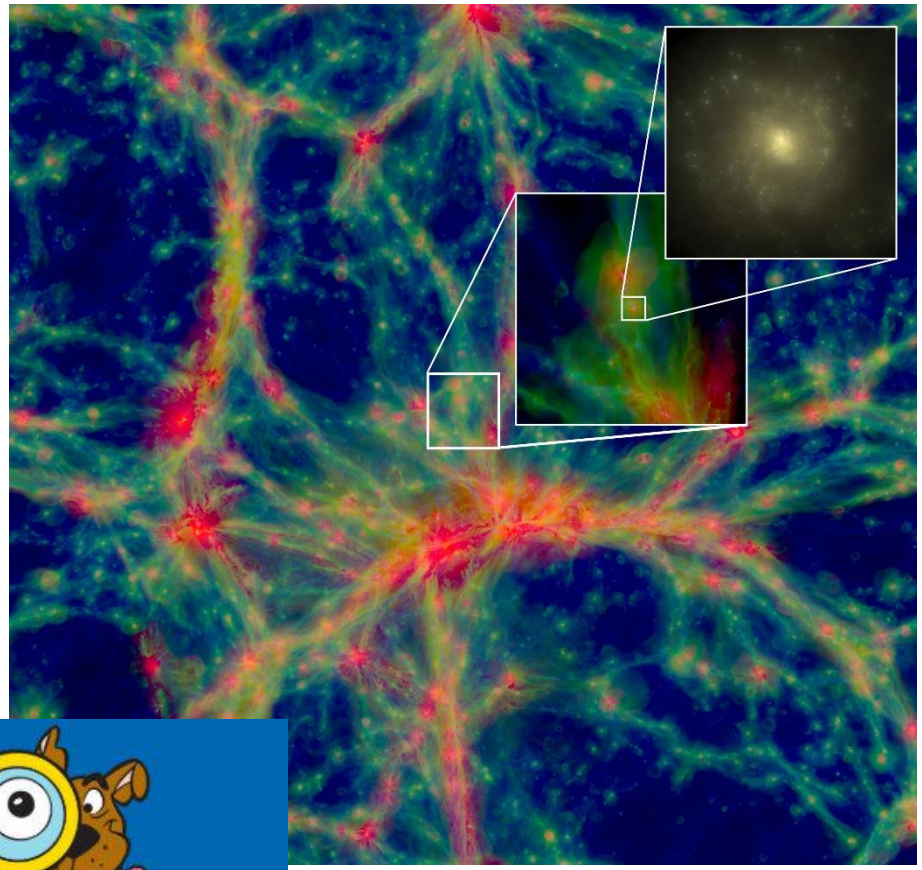
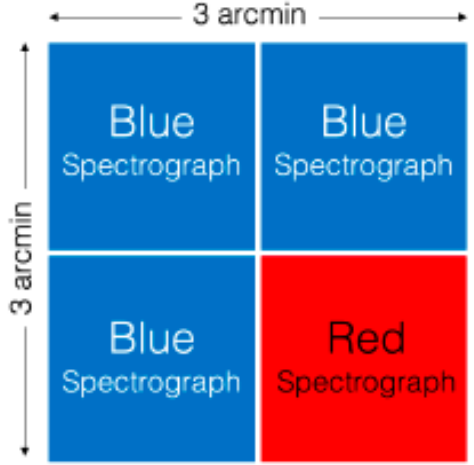

Dark Energy
Accelerated Expansion
Afterglow Light
Pattern
375,000 yrs.
Dark Ages
Development of
Galaxies, Planets, etc.
Inflation
Quantum
Fluctuations
1st Stars
about 400 million yrs.
Big Bang Expansion
13.77 billion years

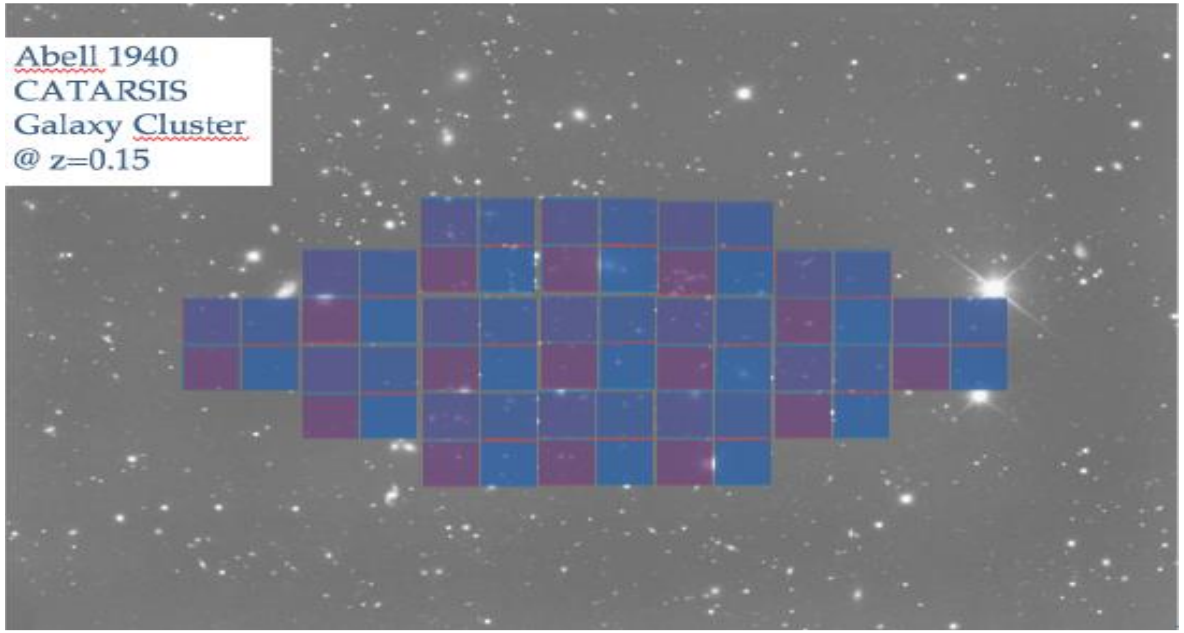


GC084 Sánchez Blázquez et al.: **Survey presentation**
GC064 Oñorbe et al.: **High-z observ. and synergies**

CATARSIS

CALAR ALTO "TETRA-ARMED SUPER-IFU SPECTROGRAPH" SURVEY





Deep IFU spectroscopy of 20 galaxy clusters and filaments at z~0.15 down to m_{AB} = 22

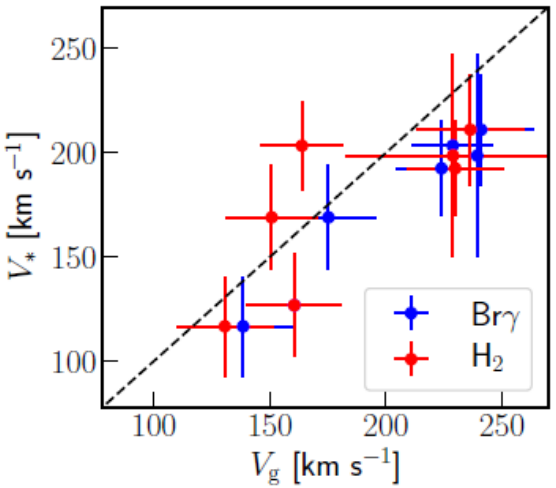
Lyα emitters at 1.6 < z < 3.2, Lyα blobs, cold accretion, counterparts of Damped Lyα systems…

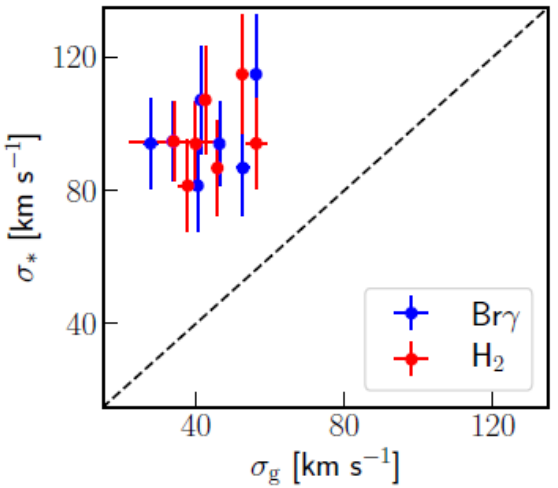
Observed λ: 320-760 nm
Sp. resolution: 1000-2000

DESIGNED FOR LONG TRIPS WITH UNKNOWN DESTINIES...

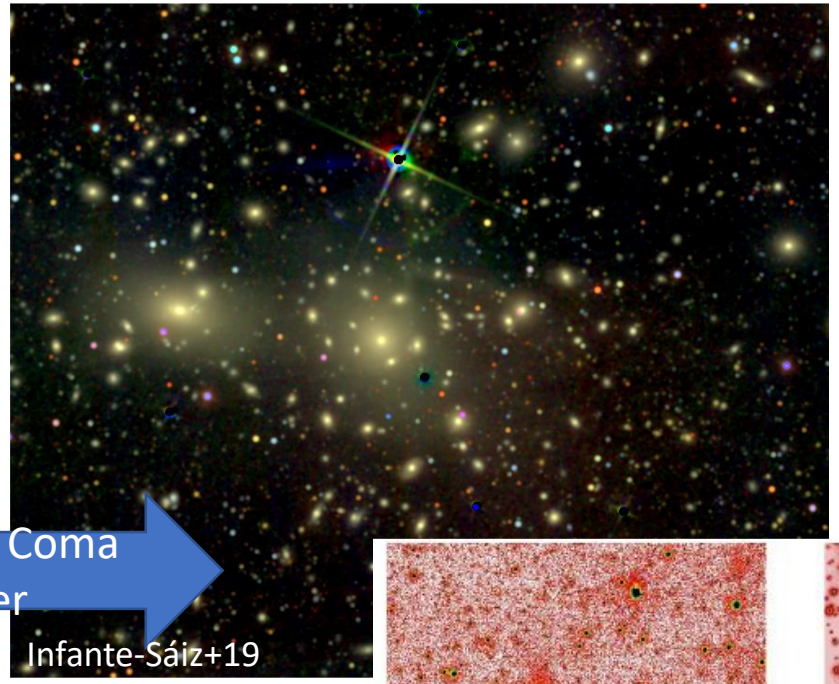
GC023 Crespo Gómez et al.: **SINFONI stellar and gas kinematics comparison in local LIRGs: implications at high-z**

SINFONI@VLT H- and K-band study of a local sample of 10 LIRGs similar to star-forming high-z galaxies





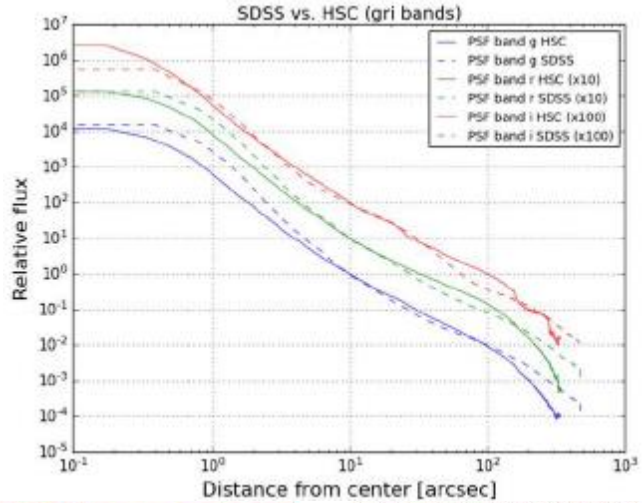
GC064 Infante-Sáiz et al.: SDSS PSF



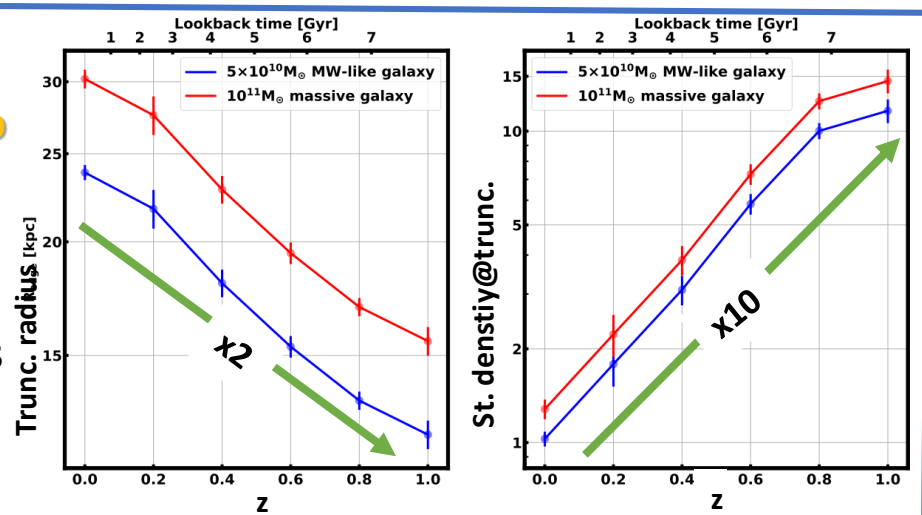
This is the Coma Cluster

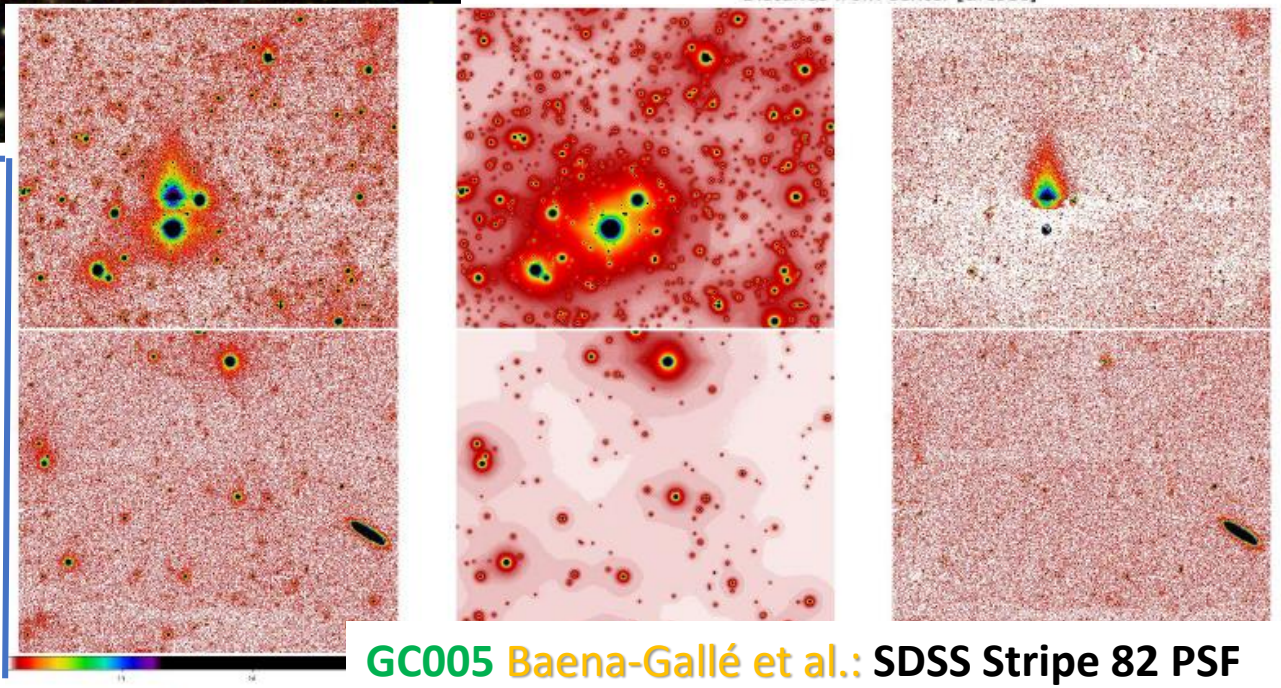
Infante-Sáiz+19

GC006 Baena-Gallé et al.: Subaru HyperSupriCam PSF



GC014 Buitrago & Trujillo: Disk truncations up to z = 1 in the CANDELS fields





Original image

Scattered field

Residual

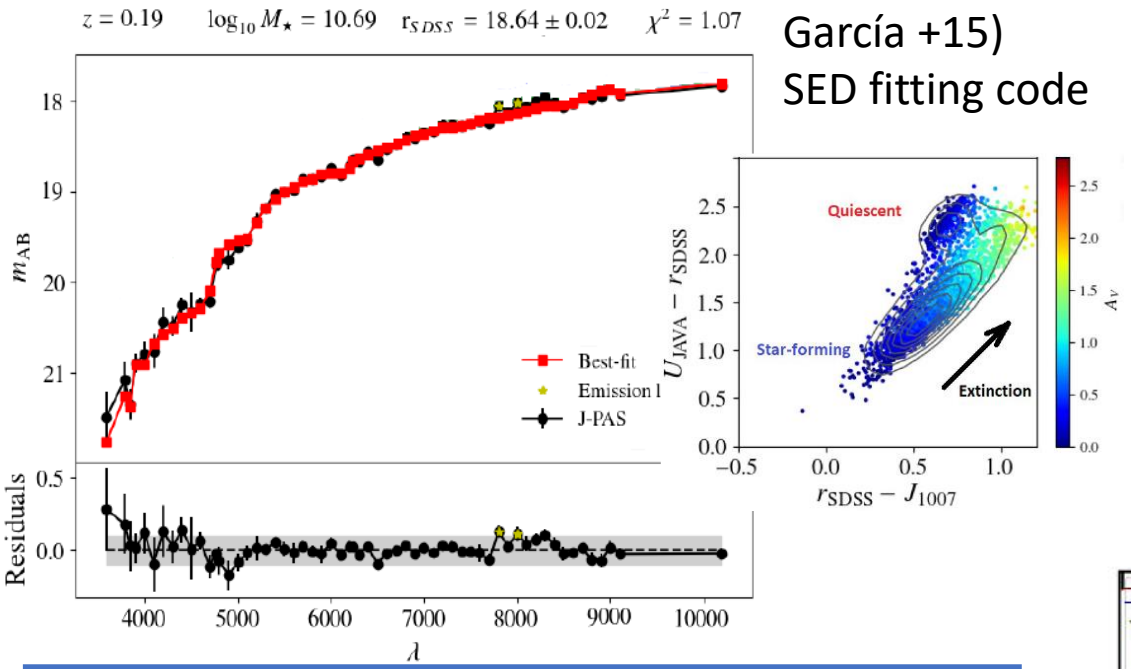
GC005 Baena-Gallé et al.: SDSS Stripe 82 PSF

Low surface brightness

GC029 Díaz-García et al.: Stellar populations in mini-JPAS

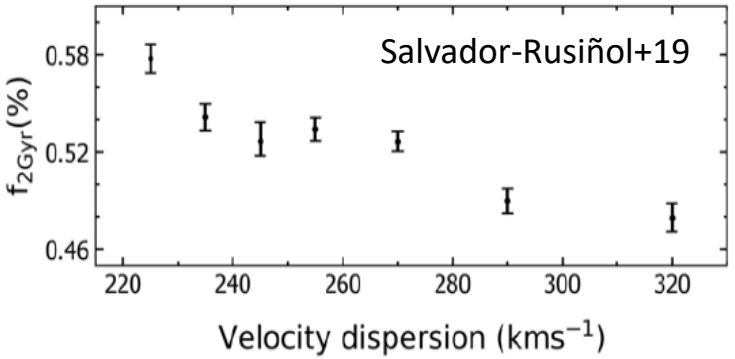
The test-bench for JPAS is already exploring the stellar content of galaxies up to z = 1

MUFFIT (Díaz-García +15) SED fitting code

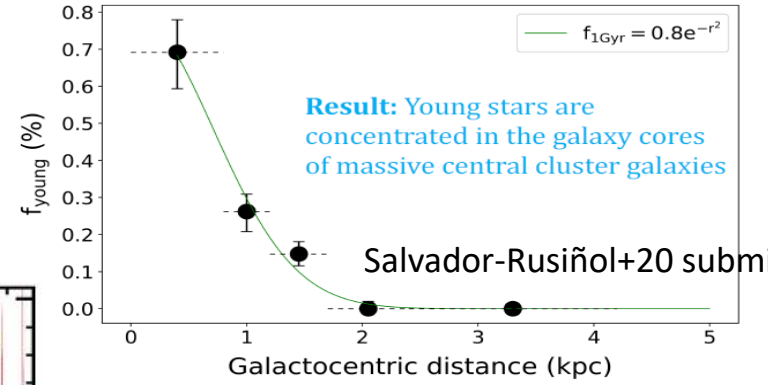


GC083 Salvador Rusiñol et al.: Young stellar populations from NUV spectroscopy in massive early-type galaxies

Stacked spectra of SDSS ETGs at z~0.4



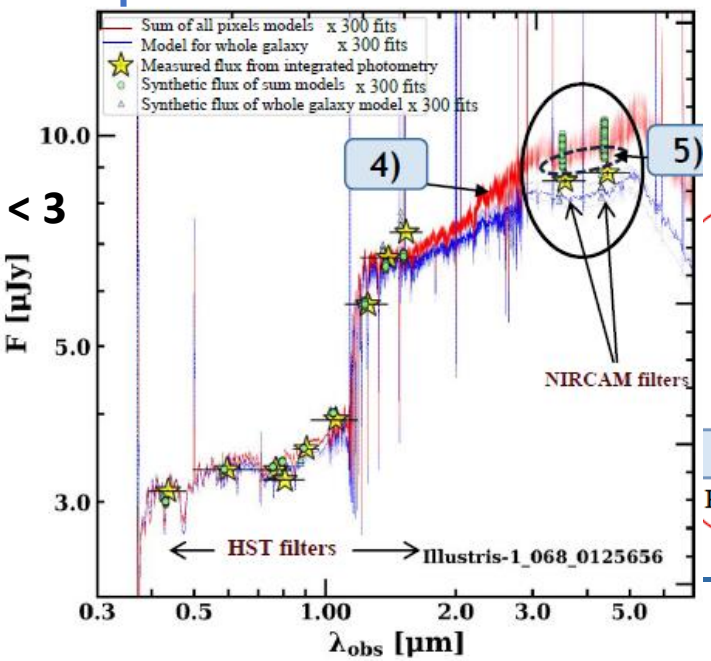
X-SHOOTER stacked spectra of 6 BCGs at z~0.05

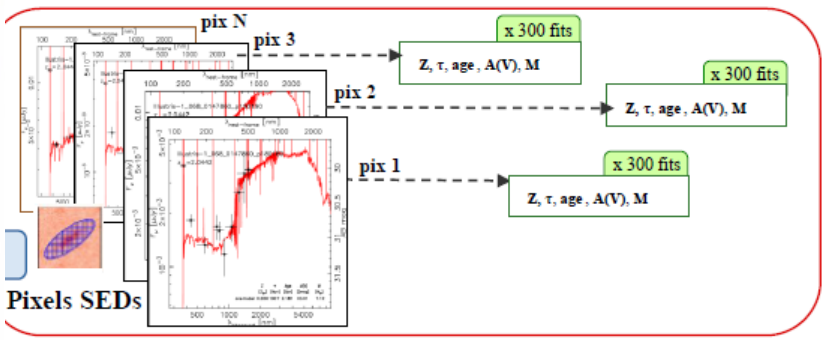


Salvador-Rusiñol+20 submitted

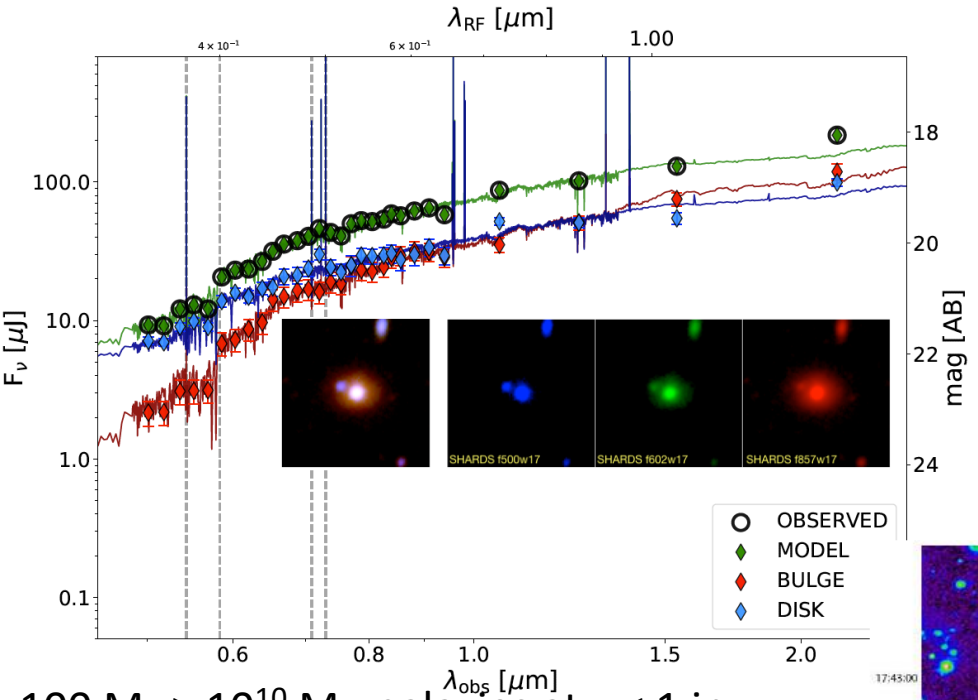
GC039 García-Argumánez et al.: Self-consistent spatially resolved Star Formation Histories of 2 < z < 3 massive galaxies

Fits to 2D photometry from the Illustris simulations reproduce SFHs than integrated photometry



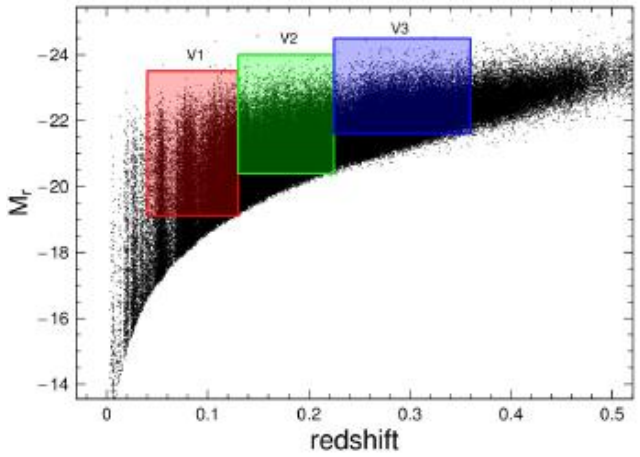


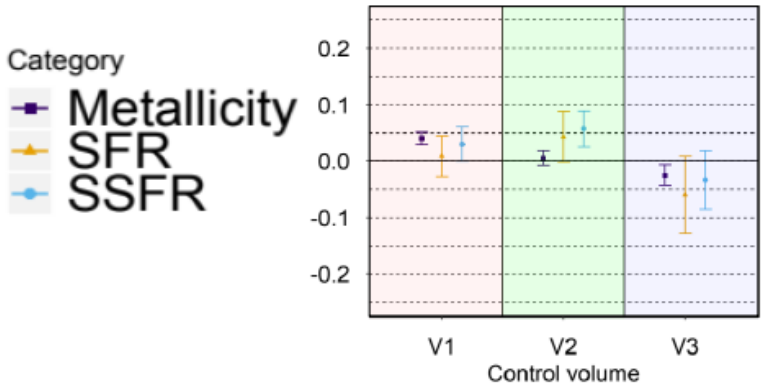
GC022 Costantin et al.: Spectro-photometric bulge-disk decoupling in SHARDS



100 $M_* > 10^{10}$ $M_\odot$ galaxies at $z < 1$ in SHARDS GOODS-N

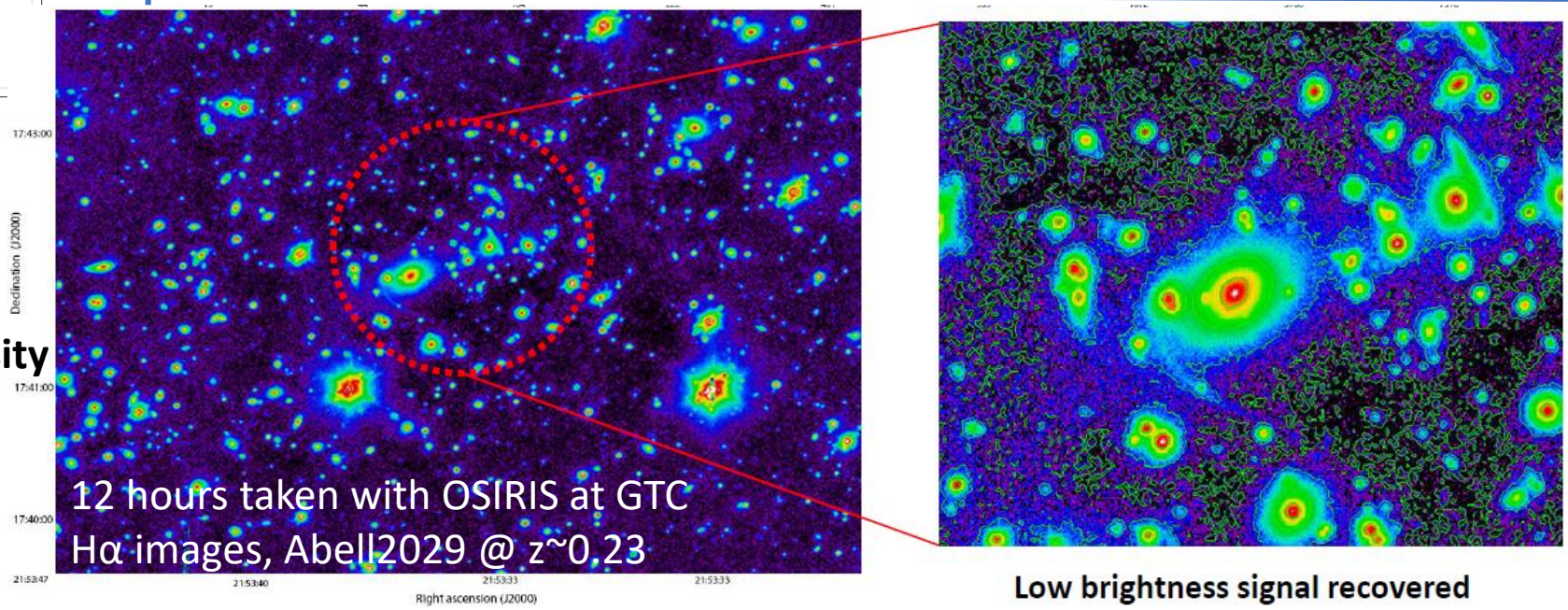
GC087 Sotillo Ramos et al.: GAMA: the interplay between mass, metallicity and SFR in galaxy groups





> 700 galaxies up to z = 0.35 with different ranges of galaxy mass and clustercentric distance

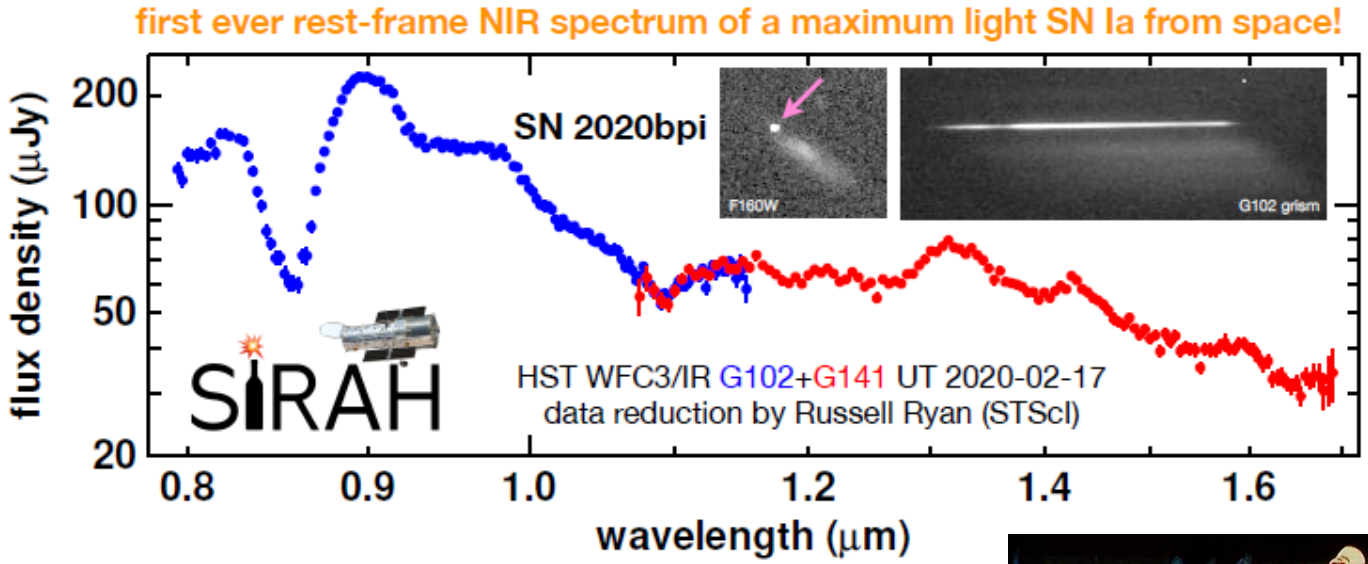
GC017 Castellanos et al.: Extended Ionized Gas in Galaxy Clusters: low surface luminosity regions as tracers of galaxy evolution



Quenching / Environment

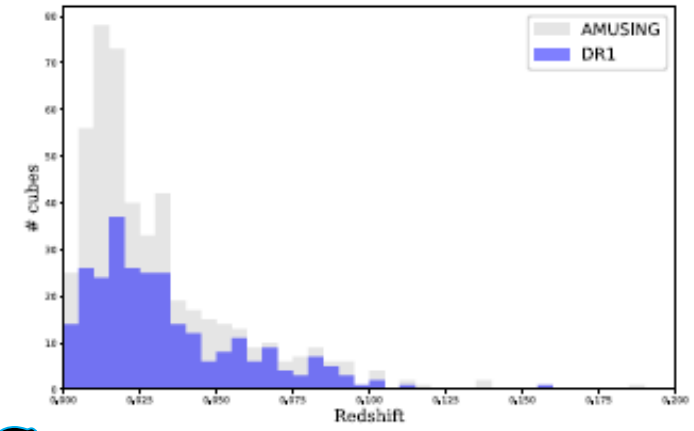
GC037 Galbany: Supernovae in the InfRAred Avec Hubble (SIRAH) survey

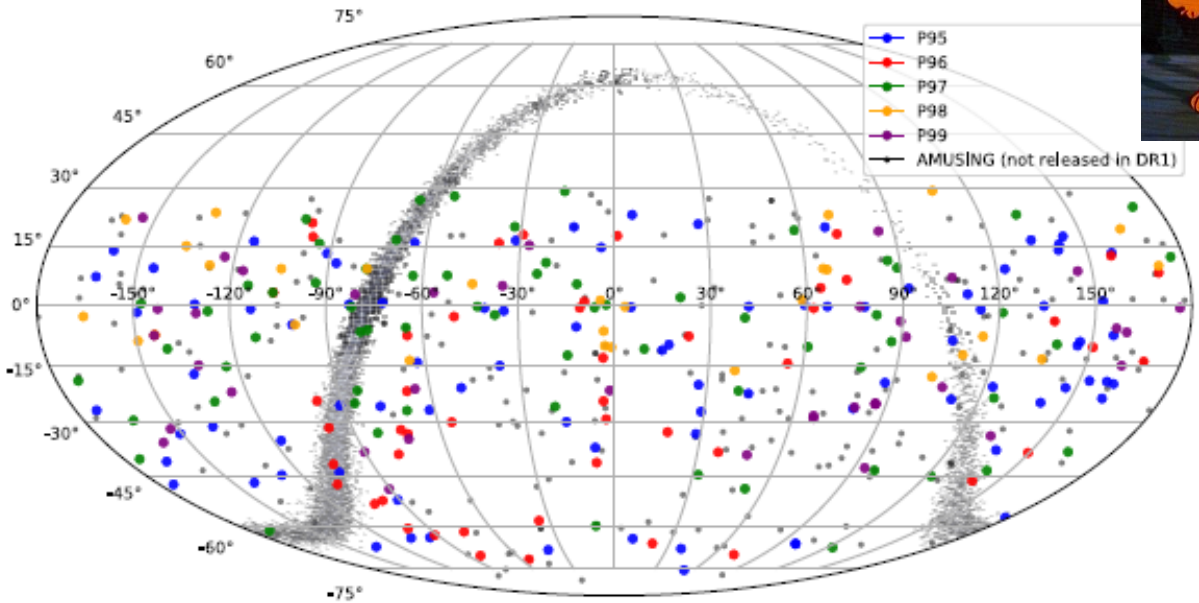
24 Hubble flow (0.02 < z < 0.07) SNe Ia with WFC3
2 GTC and 1 NOT/TNG follow-up programmes



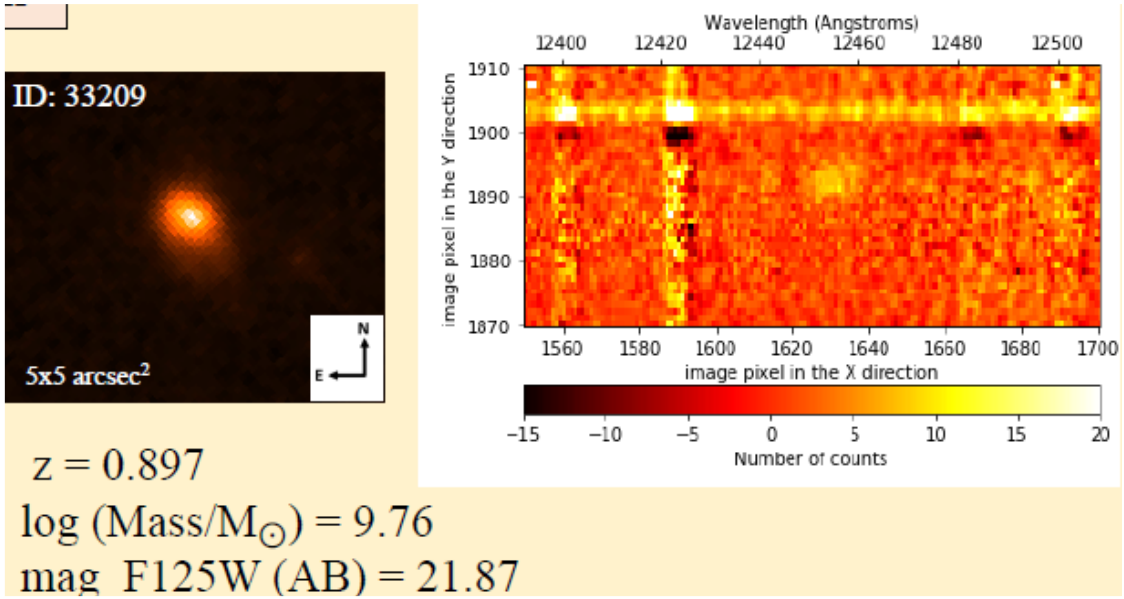
GC038 Galbany et al.: The All-weather MUse Supernova Integral-field Nearby Galaxies (AMUSING) survey

VLT MUSE filler programme for 10 semesters
Over 600h for 713 galaxies and 796 SNe
1st data release later this year





GC016 Cabello et al.: First results of the GOYA survey: low-mass star-forming galaxies 0.7 < z < 1.5 with the EMIR@GTC MOS mode

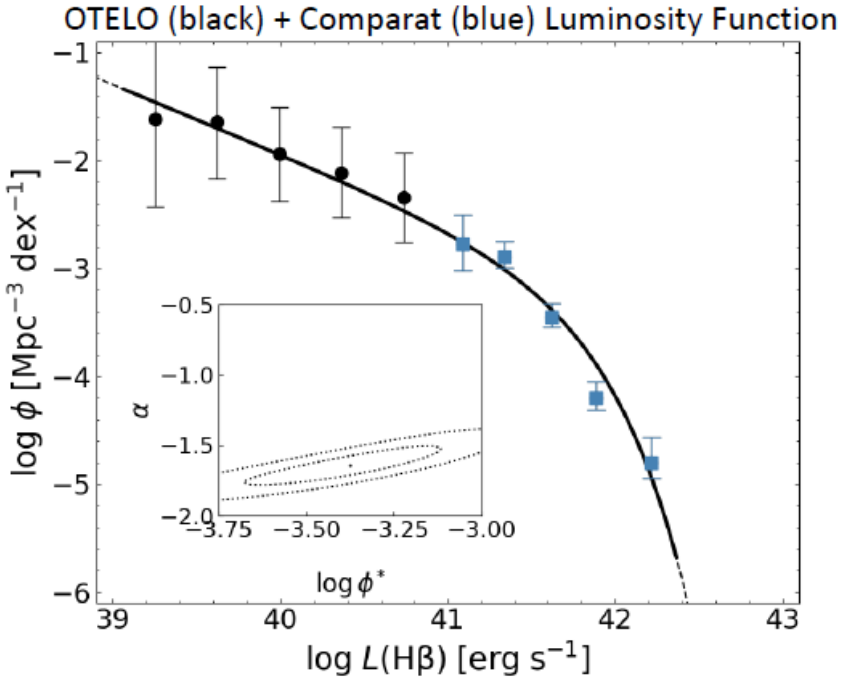


$z = 0.897$

$\log (\mathrm{Mass}/\mathrm{M}_\odot) = 9.76$

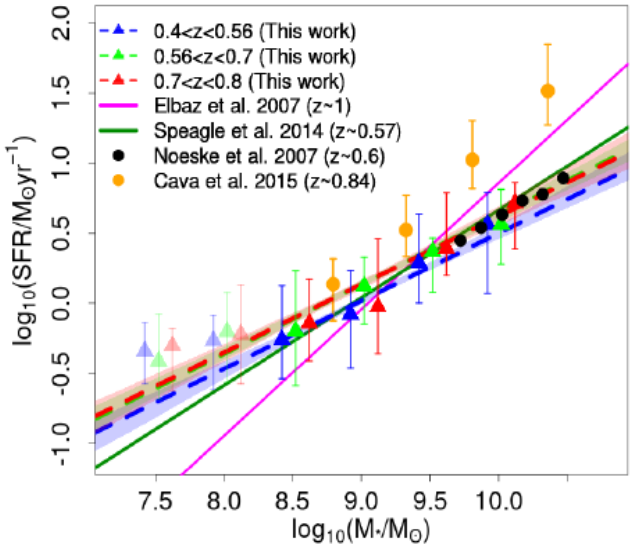
mag F125W (AB) = 21.87

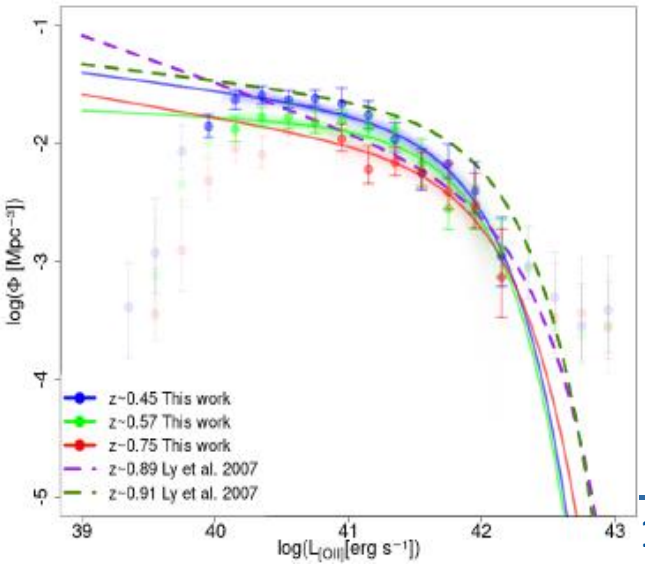
GC066 Navarro Martínez et al.: The luminosity function of the Hβ emitters at z~0.87 from the OTELO survey



50 arcmin2 in EGS with OSIRIS@GTC to a limiting mag of 27.8 with R = 700

GC057 Lumbreras-Calle et al.: [OIII] emission-line galaxies at 0.4 < z < 0.8 in SHARDS
(200h at OSIRIS@GTC)





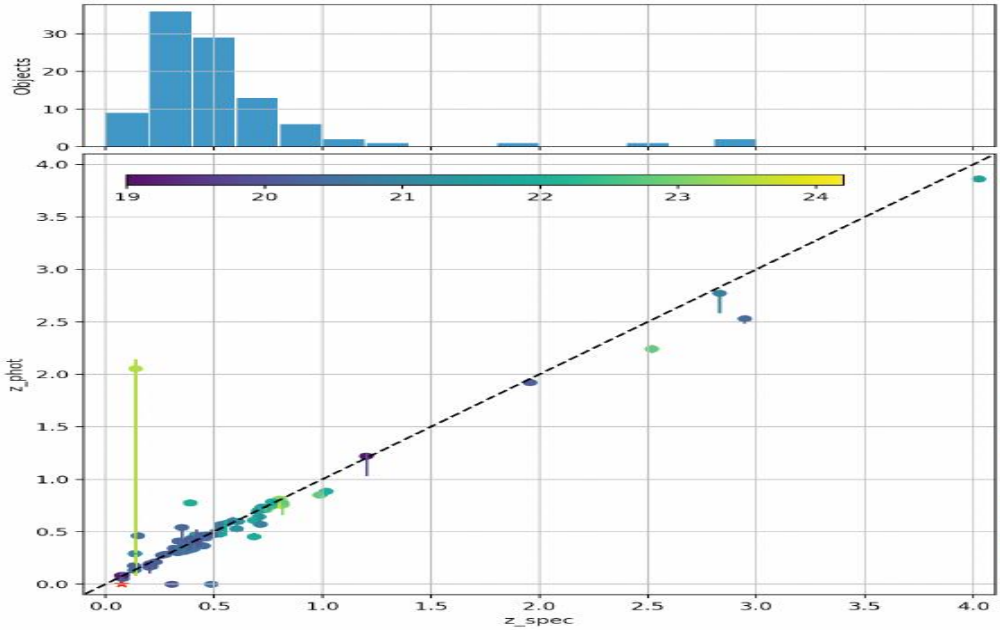
Going beyond Lumbreras-Calle+19a,b

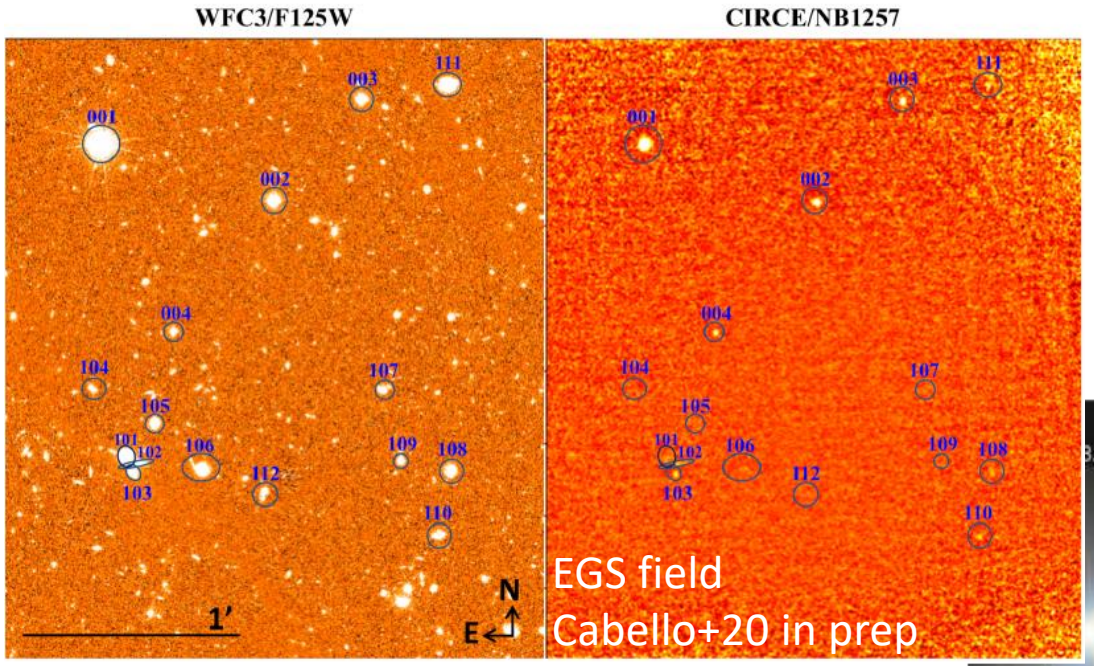
Emission line galaxies

GC043 González-Otero et al.: **Lockman SpReSo**

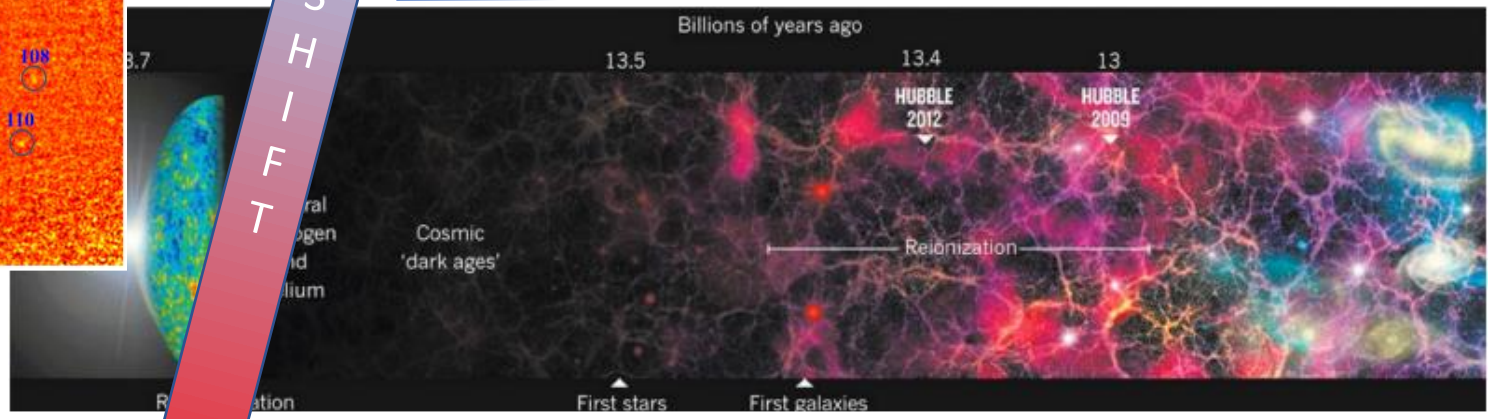
OSIRIS@GTC spectr. survey of the Lockman Hole field (240h)

80% galaxies reduced (out of 1171), 10% already spec- z





REDSHIFT



GC016 Cabello et al.: **Deep near-IR narrow-band imaging with CIRCE@GTC: searching for Lyα-emitters at z ~9.3**

Using a 11 nm FWHM filter in EGS for > 18 hours

No high-z objects, but many interlopers

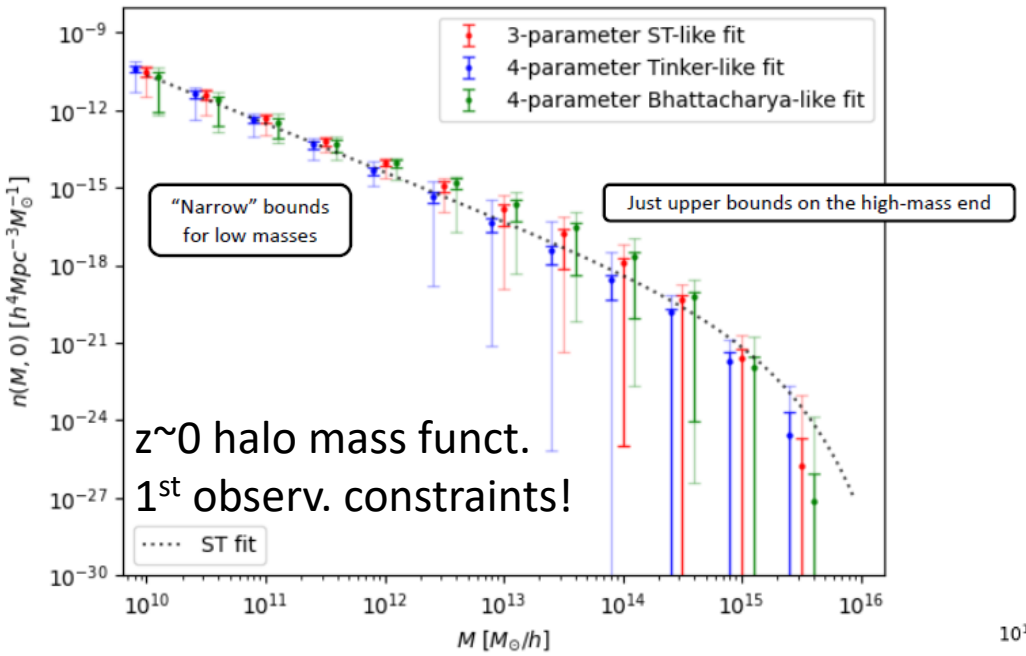
GC077 Rodríguez Espinosa et al.: **An ionised bubble before the epoch of recombination**

Observations of a proto-cluster of Lyα-detected galaxies at z~6.5

Lyα leakage able to ionized surrounding medium

High-z surveys

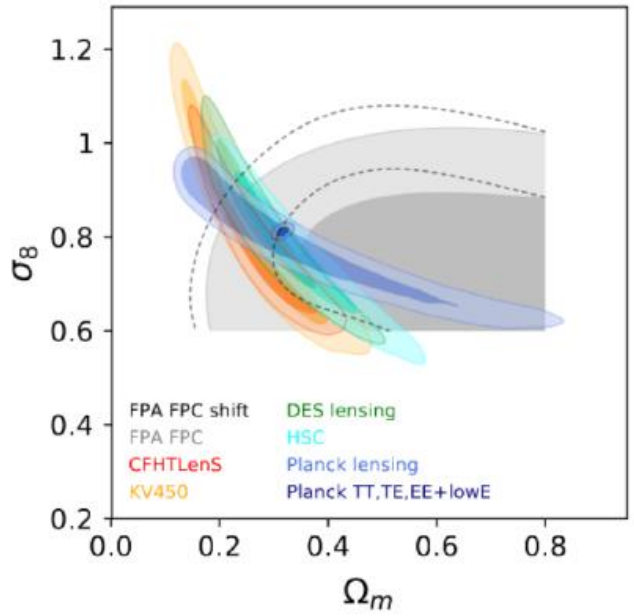
GC024 Cueli et al.: Observational constraints on the halo mass function

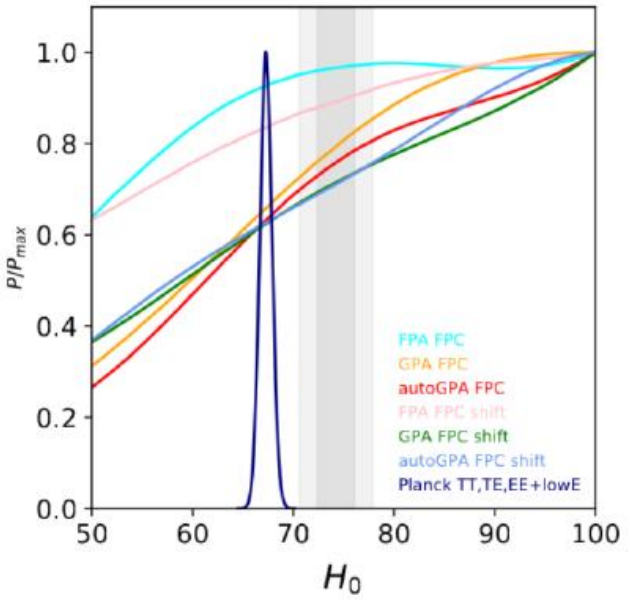


z~0 halo mass funct.
1st observ. constraints!

GC011 Bonavera, Cueli & González Nuevo: Cosmology with the submillimetre galaxies magnification bias

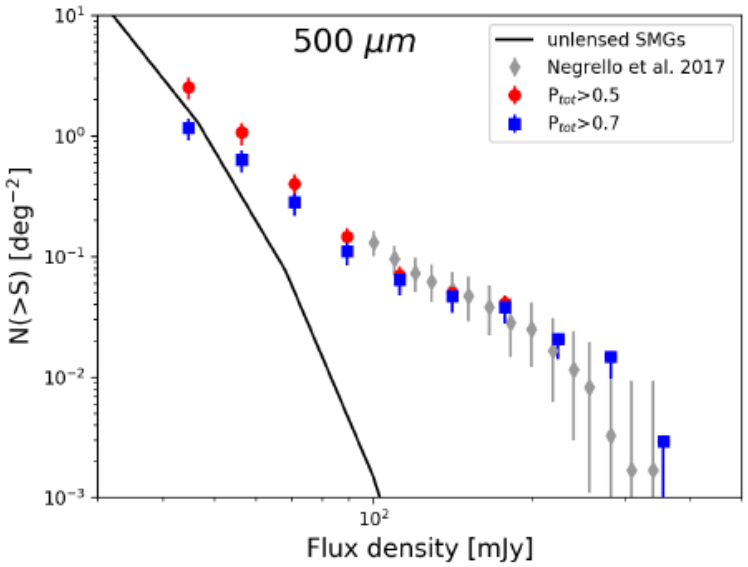
arXiv: 2006.09185



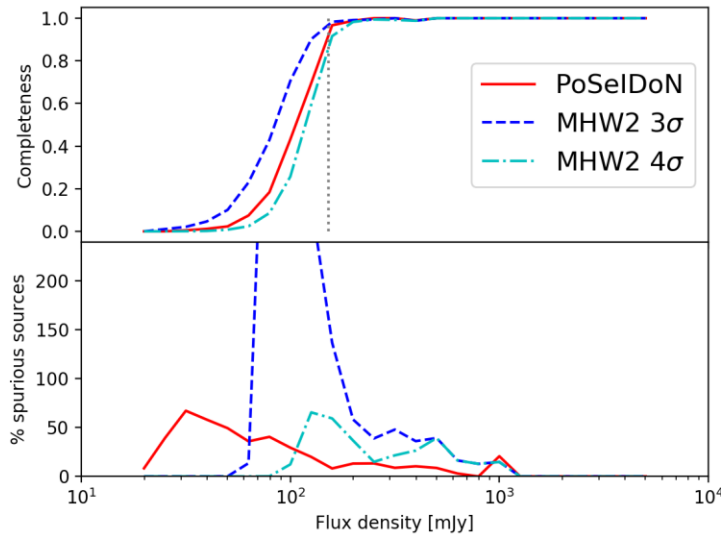


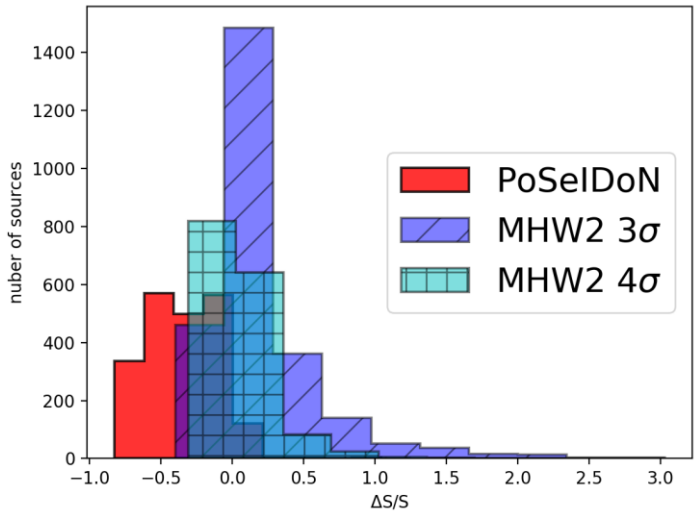
GC042 González-Nuevo & Bonavera: SHALOS: Statistical Herschel-ATLAS lensed objects selection

Increasing by x5 the number of galaxy-galaxy strong lensing events within the *Herschel*-ATLAS data set



GC011 Bonavera & González-Nuevo: Point Source Detection with Fully-Convolutional Networks: Performance in Realistic Microwave Sky Simulations

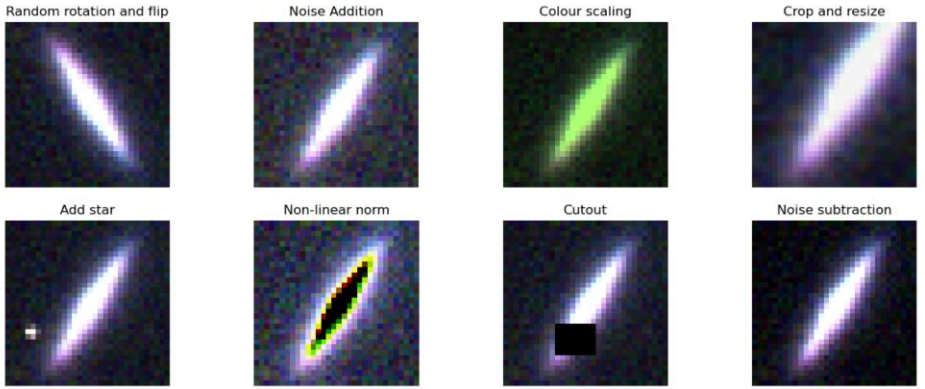


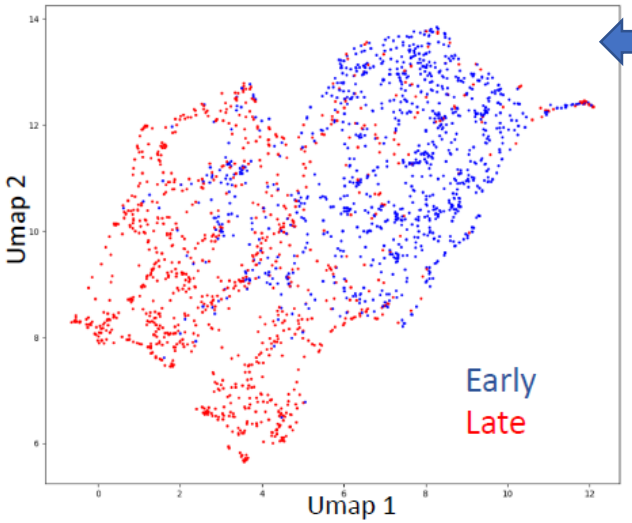


- <u>Similar completeness, better reliability</u>
- "Confidence factor" controls spurious sources but as a consequence underestimates flux densities
- Performance slightly worsen for images other than the training ones

143, 217 and 353 GHz Planck channels

GC086 Sarmiento: Galaxy morphology classification using unsupervised machine learning techniques





2000 galaxies with 64-parameters to a 2D Umap representation

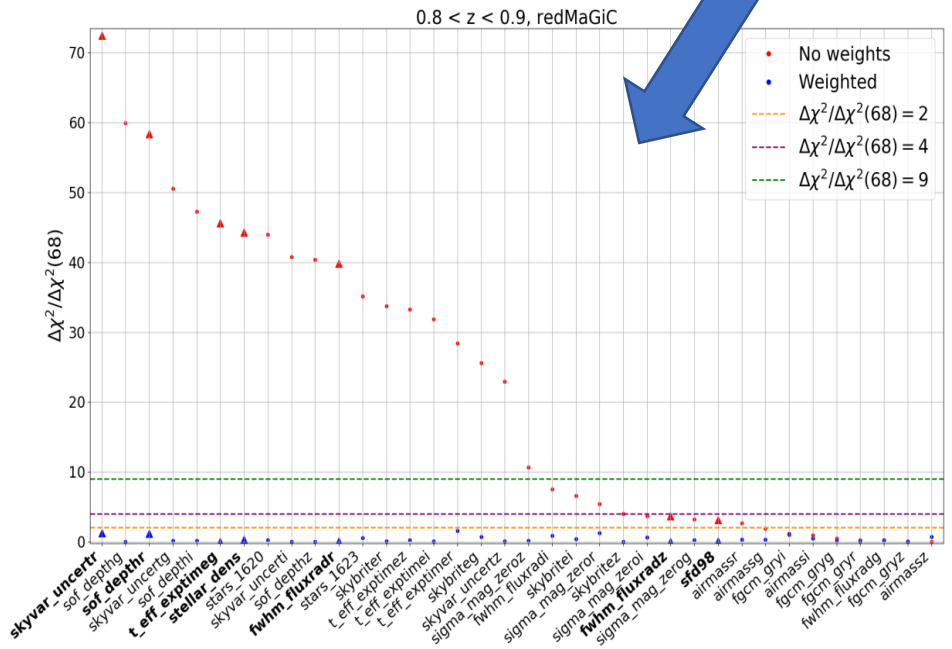
<u>Work in progress</u>: Simple Contrastive Learning of visual Representations (SimCLR) on 377419 SDSS cut-outs of galaxies at z < 0.15

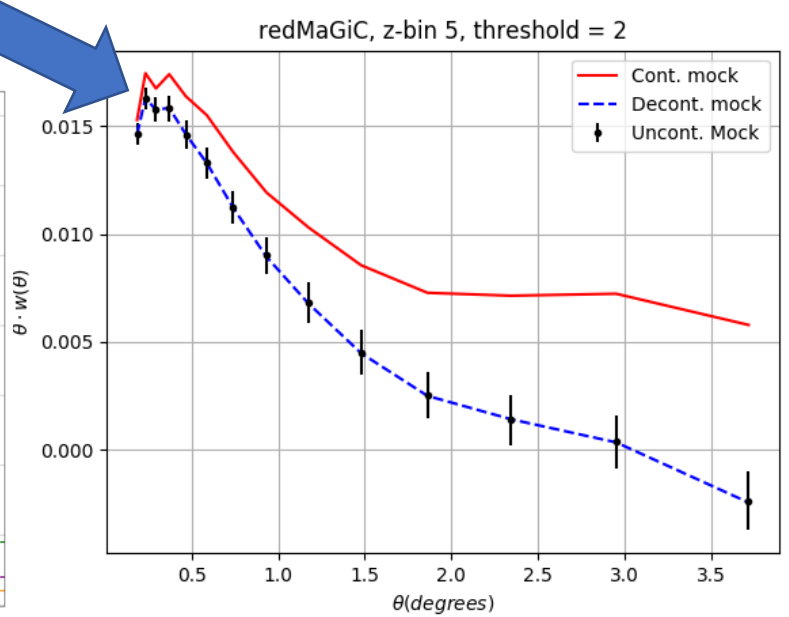
THE DARK ENERGY SURVEY

GC061 Mena-Fernández: BAOs DES Y3

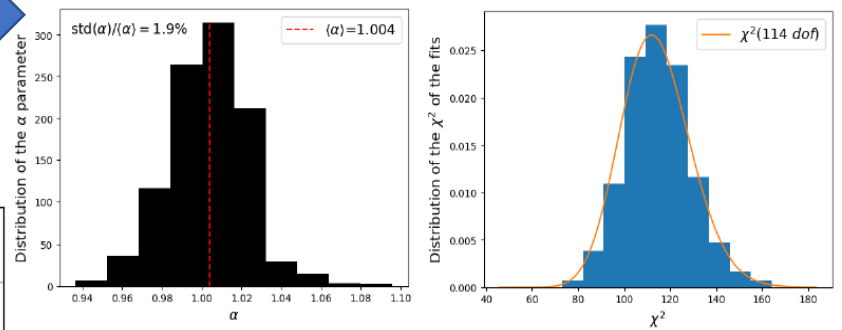
GC079 Rodríguez-Monroy et al.: Galaxy clustering DES Y3

5000 deg^2 imaged in u, g, r, i, z

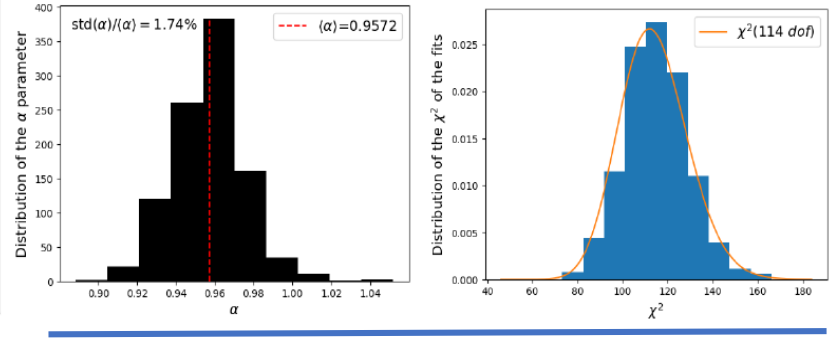




1. Using the MICE template



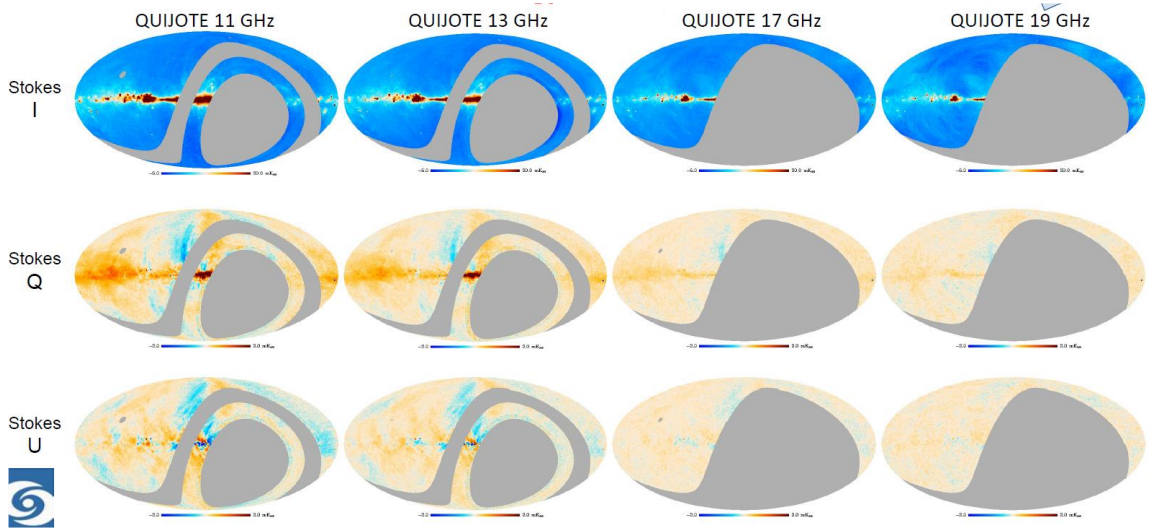
2. Using the Planck template



GC045 Guidi et al. : Wide-survey of the QUIJOTE CMB experiment

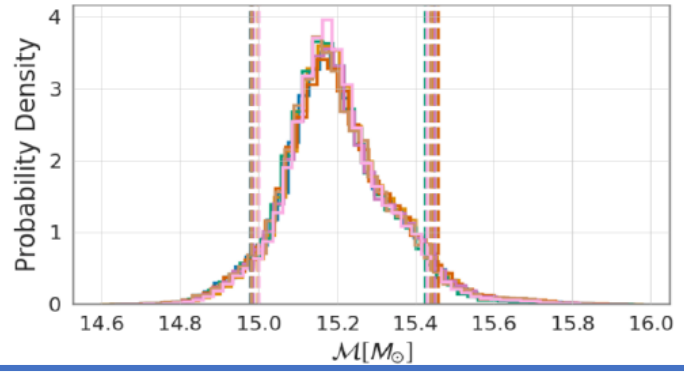
MFI instrument, full northern hemisphere

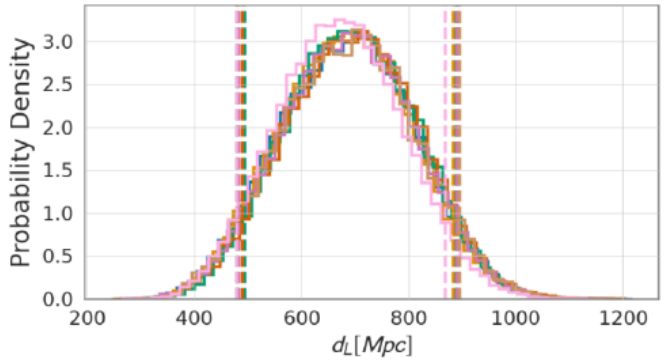
20.000 deg²
~1 year in nominal mode
Sensitivities in Q,U:
≈55 μK/1ºbeam @ 11, 13 GHz
≈40 μK/1ºbeam @ 17, 19 GHz



GC060 Mateu Lucena et al.: Using convergence tests to understand the performance of a parallel parameter estimation sampler for gravitational wave applications

Bayesian inference applied to gravitational wave detections, specifically nested sampling for the event GW190412

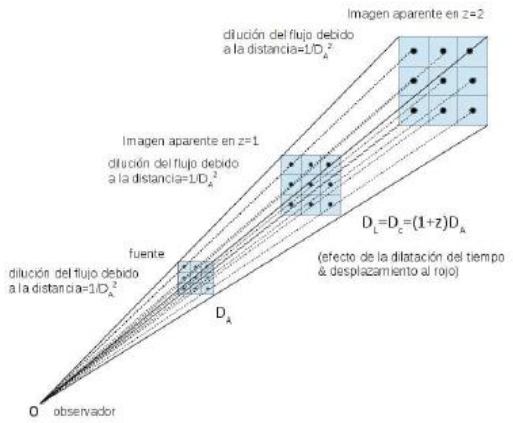




GC026 De Vicente: A new Cosmological paradigm (Cosmic Lensing)

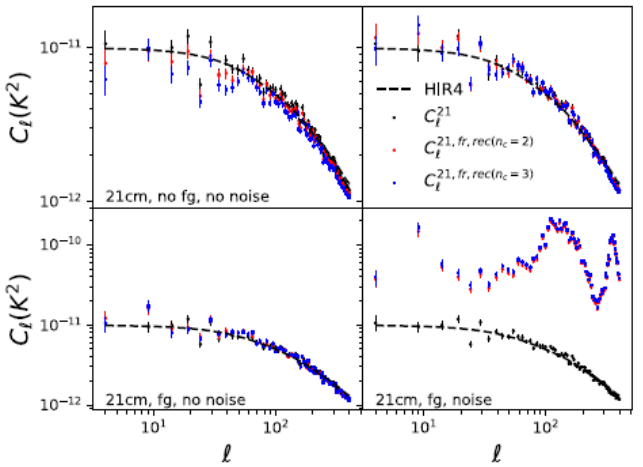
$D_L = D_A(1+z)$ instead of $D_L=D_A(1+z)^2$

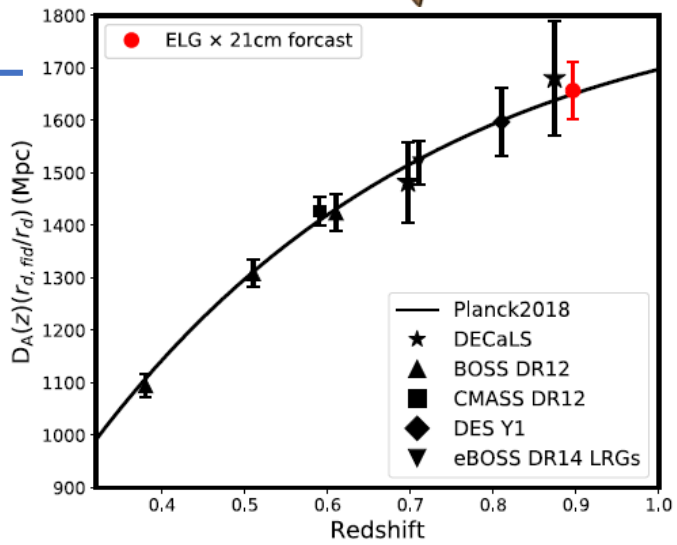
arXiv: 2003.05307, 2003.06139



GC004 Asorey et al.: HIR4: Cosmology from a simulated neutral hydrogen full sky using Horizon Run 4

Cosmological parameters with auto and cross-correlations



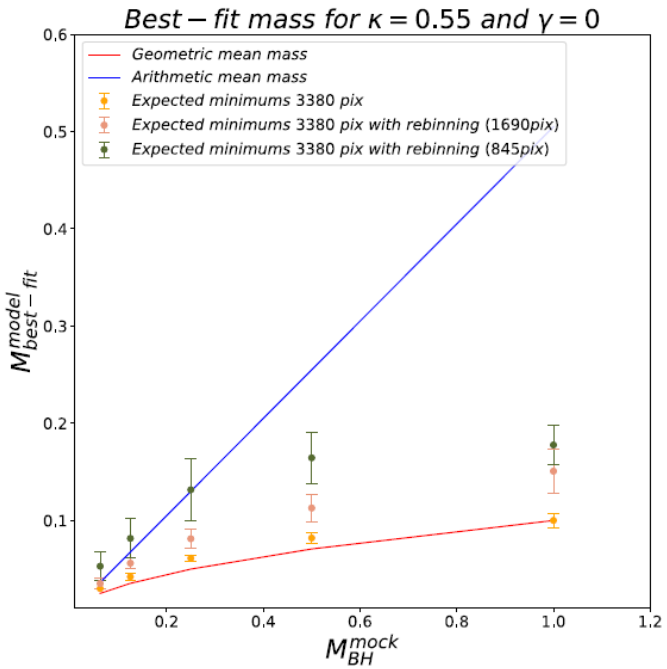


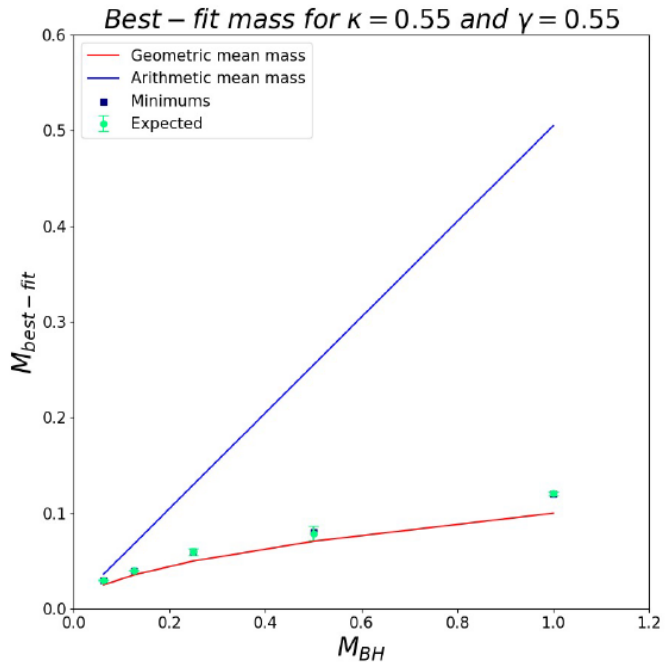
Forecast for the Tianlai pathfinder

GC036 Esteban-Gutiérrez et al.: The Impact of the Mass Spectrum of Lenses in Quasar Microlensing Studies. Constraints on a Mixed Population of Primordial Black Holes and Stars

We show that quasar microlensing magnification statistics induced by a population of point microlenses distributed according to a mass-spectrum can be very well approximated by that of a single-mass, "monochromatic", population. When the spatial resolution (physically defined by the source size) is small as compared with the Einstein radius, the mass of the monochromatic population matches the geometric mean of the mass-spectrum. Otherwise, the best-fit mass can be larger. Taking into account the degeneracy with the geometric mean, the interpretation of quasar microlensing observations under the hypothesis of a mixed population of primordial black holes and stars, makes the existence of a significant population of massive black holes (~100M⊙) unlikely but allows, within a two-σ confidence interval, the presence of a large population (40% of the total mass) of very small black holes (~0.01M⊙).

MOCK - Bimodal Distribution	MODEL - Single Mass Distribution
$\kappa_T = \kappa_{star} + \kappa_{BH} = 0.55$ $\kappa_{star} = \kappa_{BH} = 0.275$	$\kappa_T = \kappa_{smooth} + \kappa_{\bullet} = 0.55$ $\kappa_{\bullet} = variable$
$M_{star} = 0.01$ $M_{BH} = variable$	$M_{\bullet} = variable$





Special mention (as we forgot about this contribution)