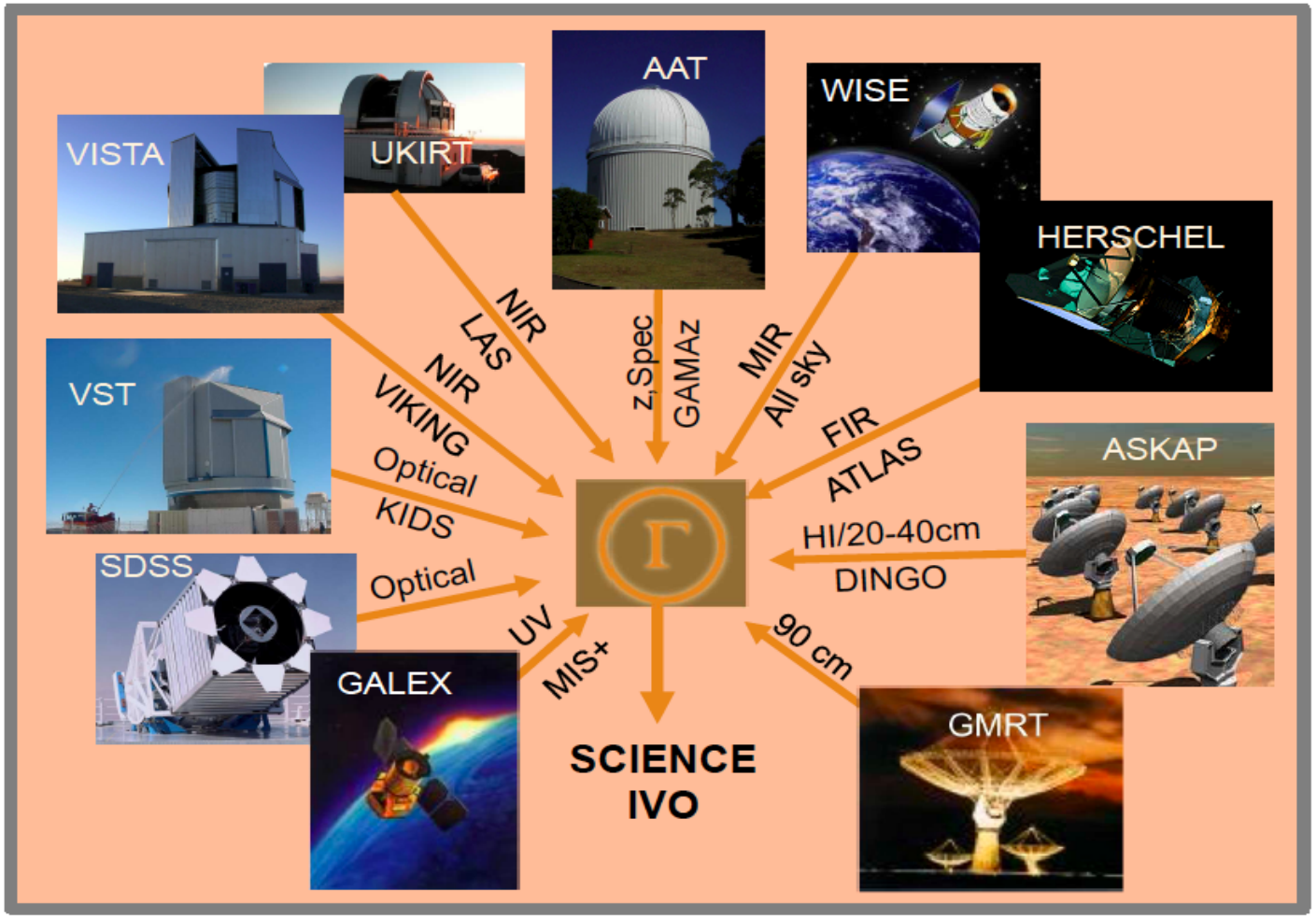
# Galaxy And Mass Assembly survey and VST ATLAS/KIDS





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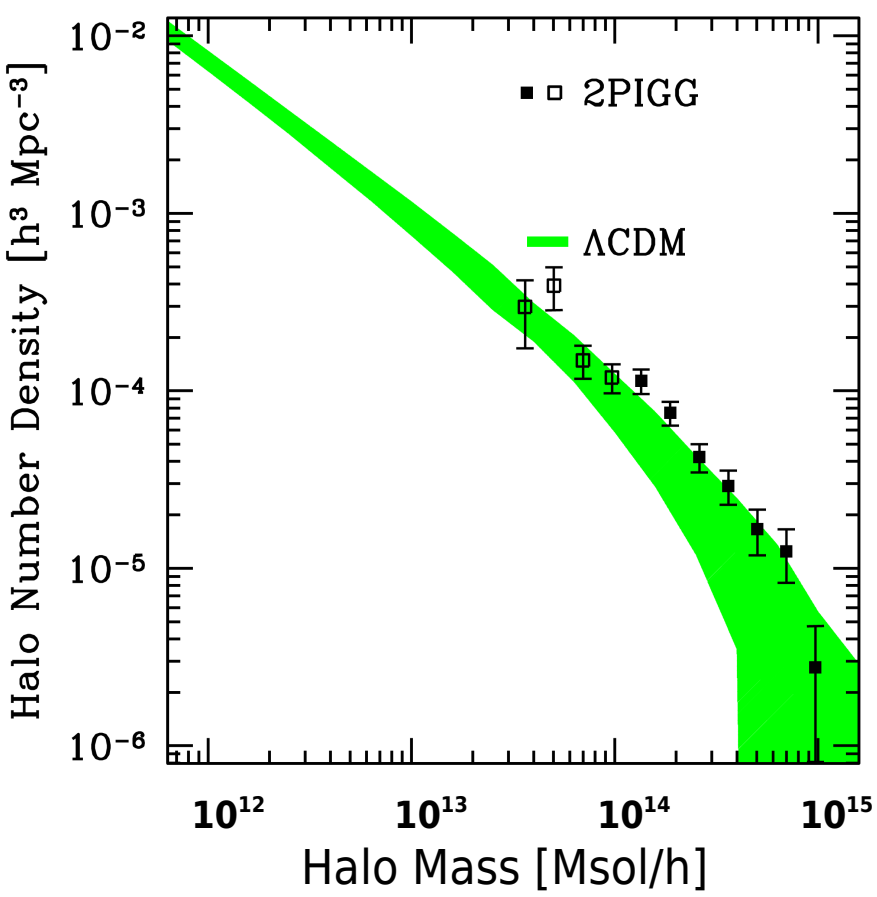
***Many thanks to The Royal Society & the ERC for their financial support***

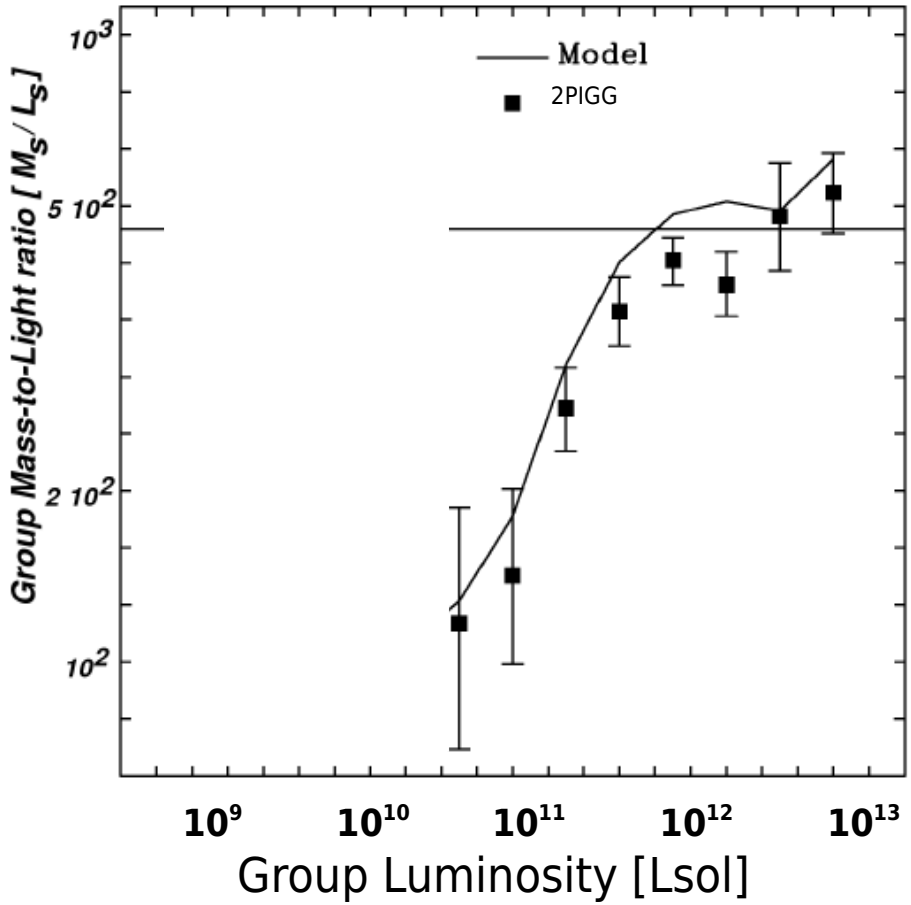
# GAMA: la raison d'être

## *(with predictions from semi-analytic galaxy formation models)*

### Dark Matter Halo Mass Function




### Galaxy Formation Efficiency



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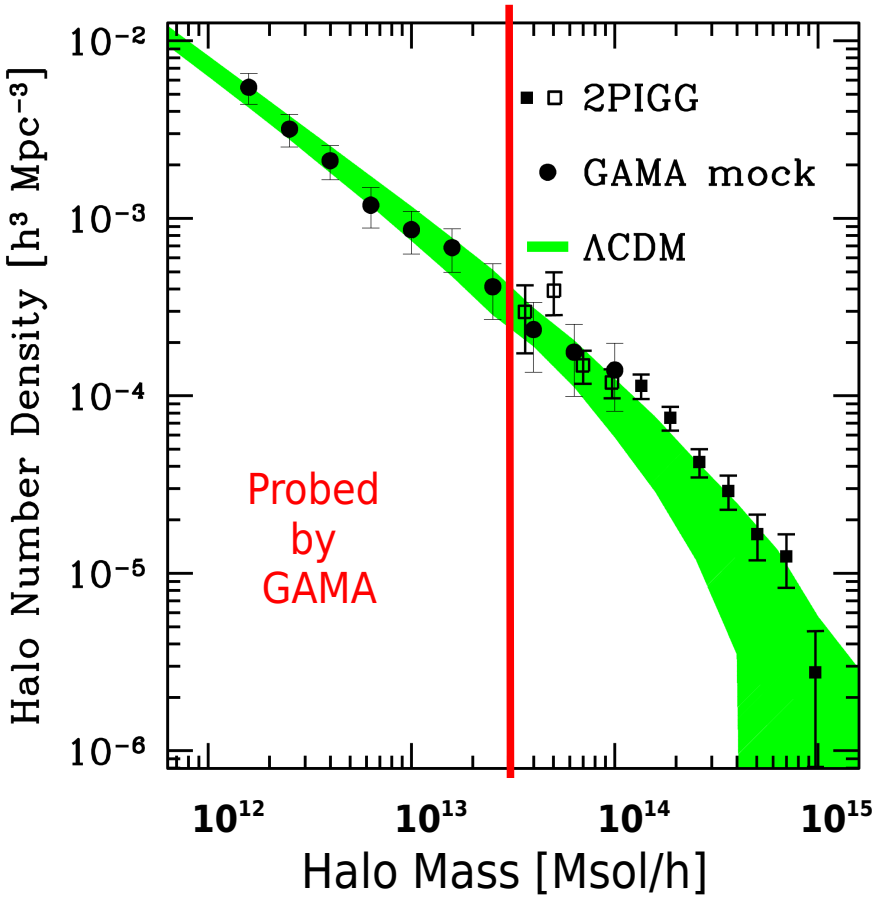
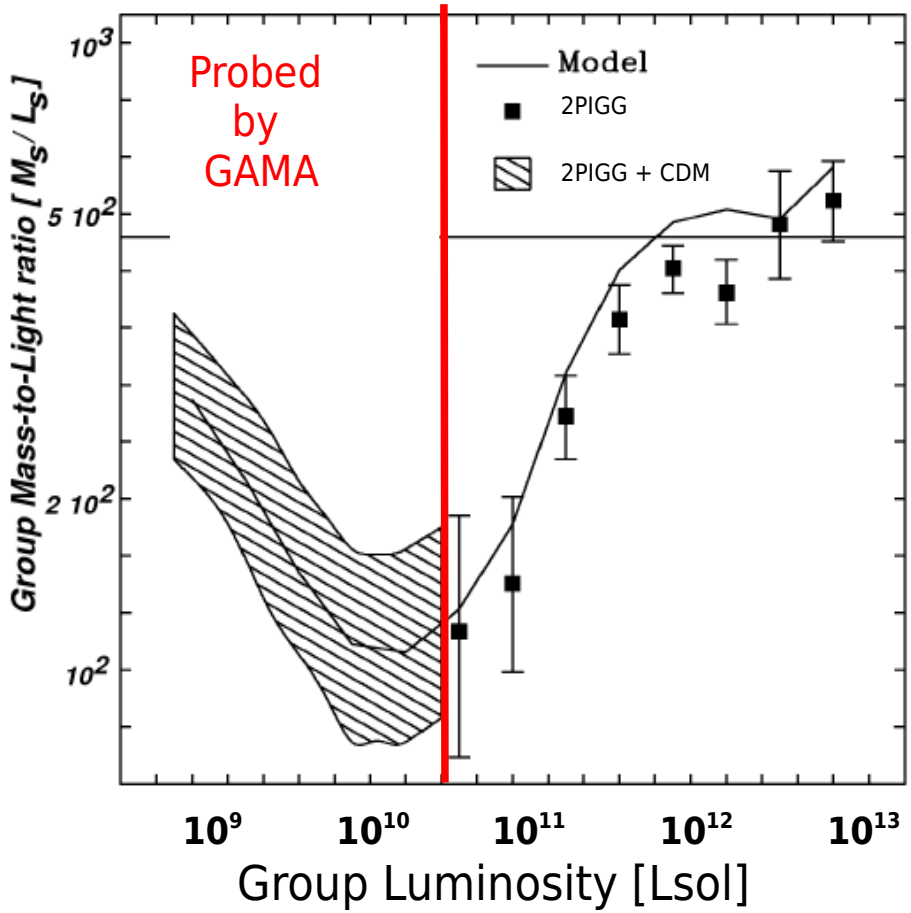



### Galaxy Formation Efficiency



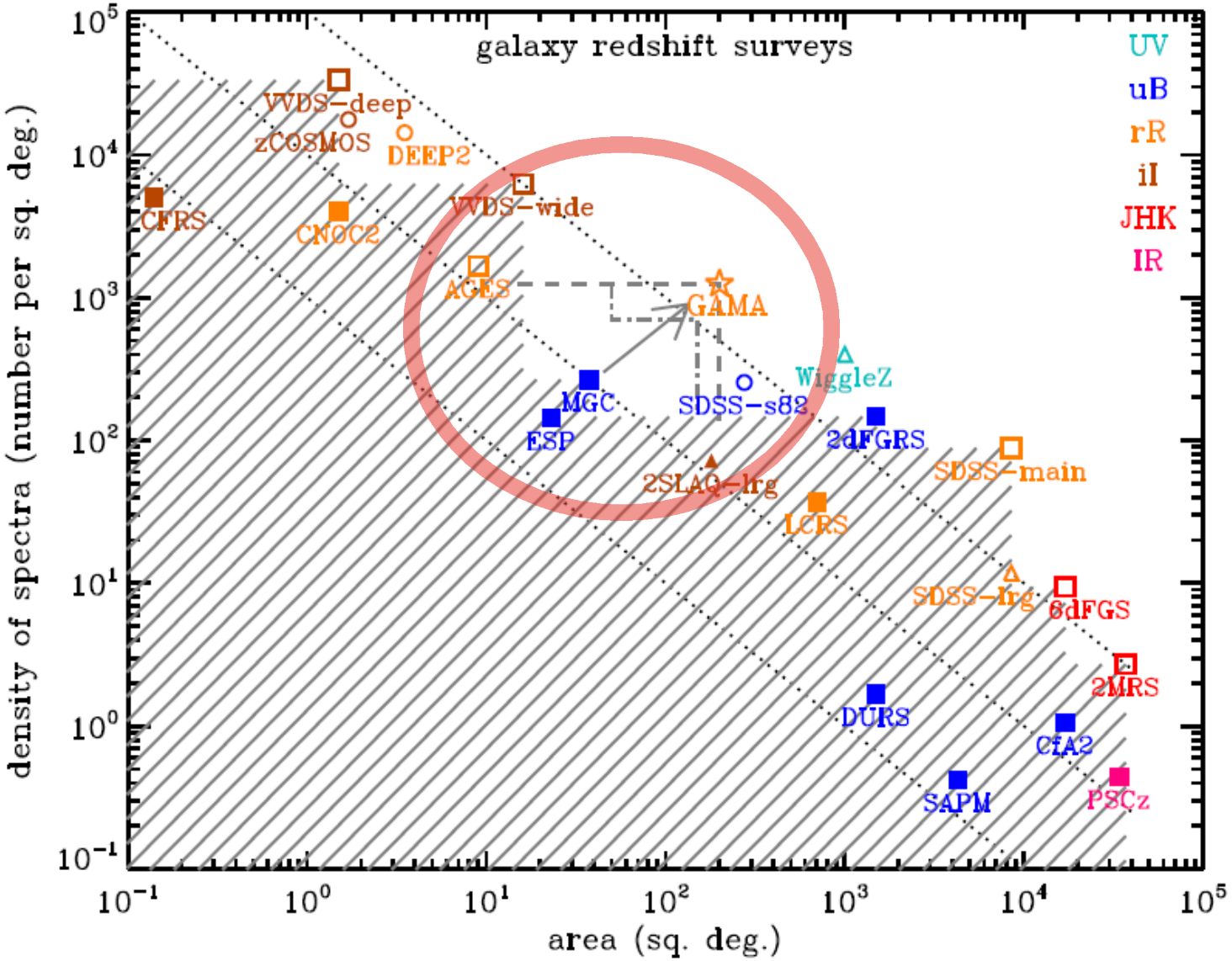
# *Galaxy And Mass Assembly Survey:*

- Next generation galaxy redshift survey:
  - ~400,000 galaxy spectra to $r_{AB}$~19.8:
    - 2 mag. fainter than SDSS => L* at z~0.30 [~4 Gyr]
  - ~360 sq. deg. wide, overlapping with SDSS and 2dFGRS
  - >150 nights on AAT with AAOmega (2008-2012)
  - GAMA is also K-band limited, with $K_{AB}$<17.6
- GAMA is a unique survey and fills an essential gap in the current generation of redshift surveys, between the very wide low-z and very narrow high-z.
- Already in the GAMA bag (GAMA-I):

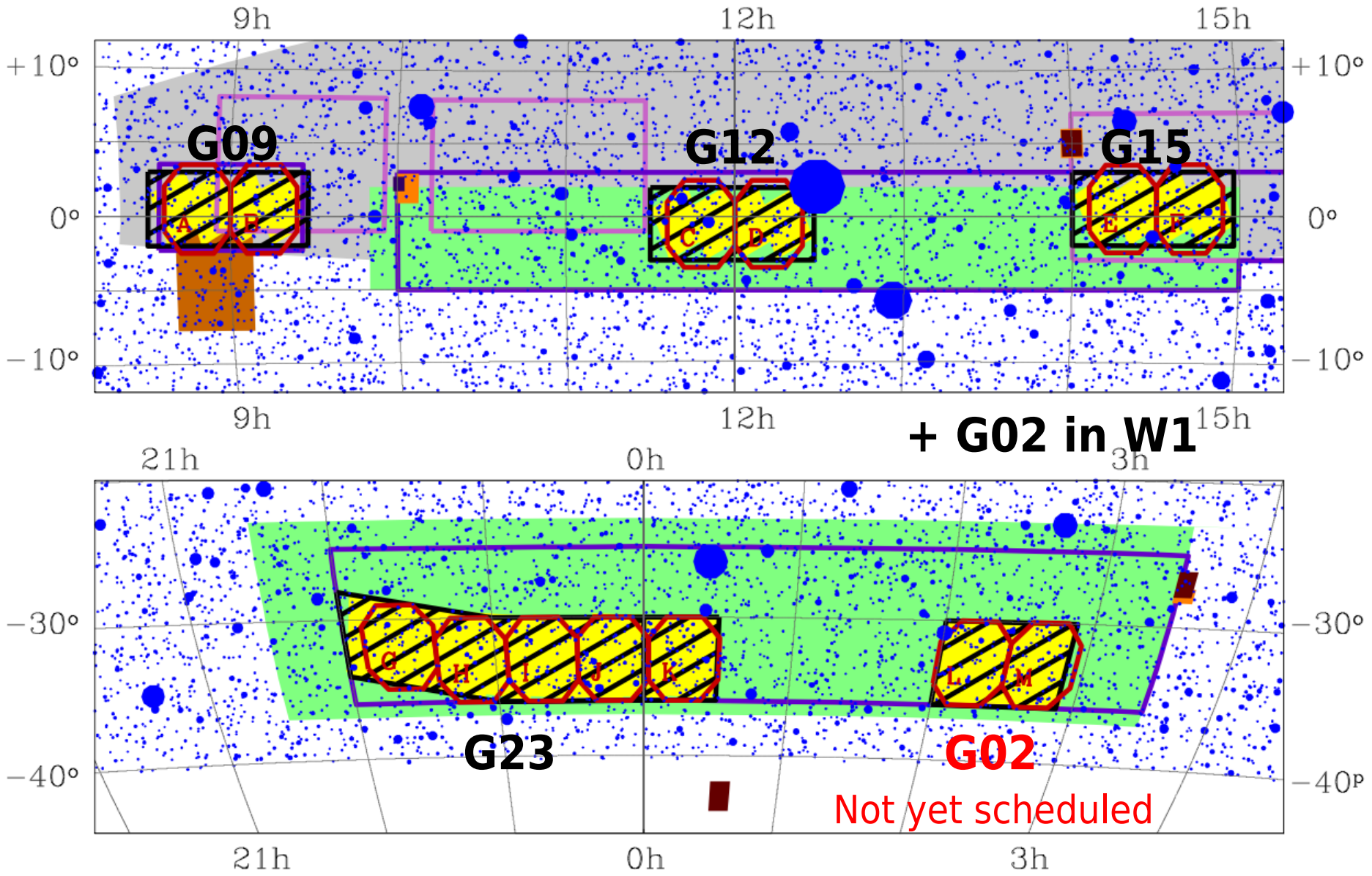
  >150k spectra with uniform coverage over 144 sq.deg.

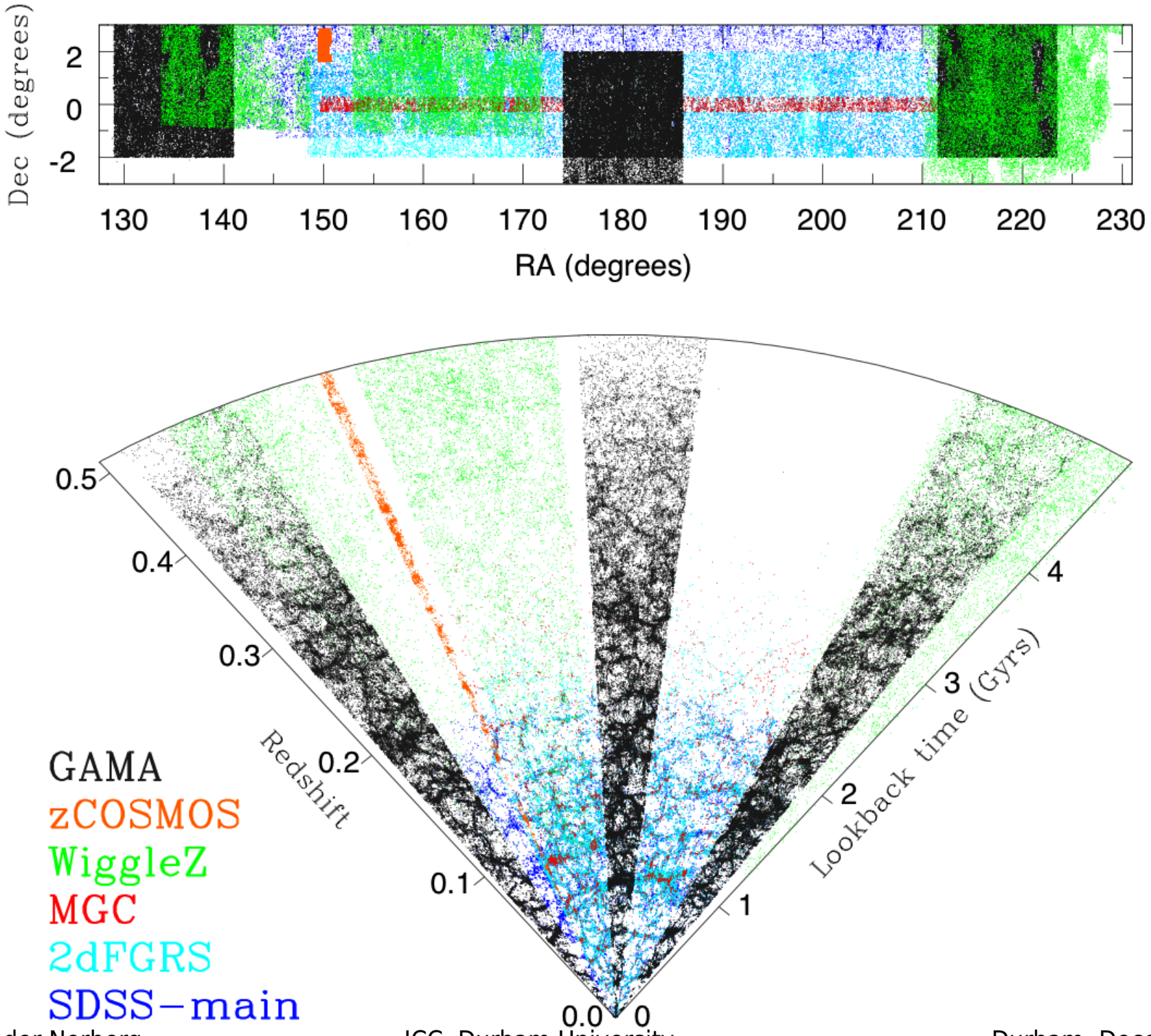
# Galaxy And Mass Assembly Survey:

## *germane connection between shallow-wide & deep-narrow*



# Location of the 5 (6) GAMA fields, each of ~70 sq.deg.

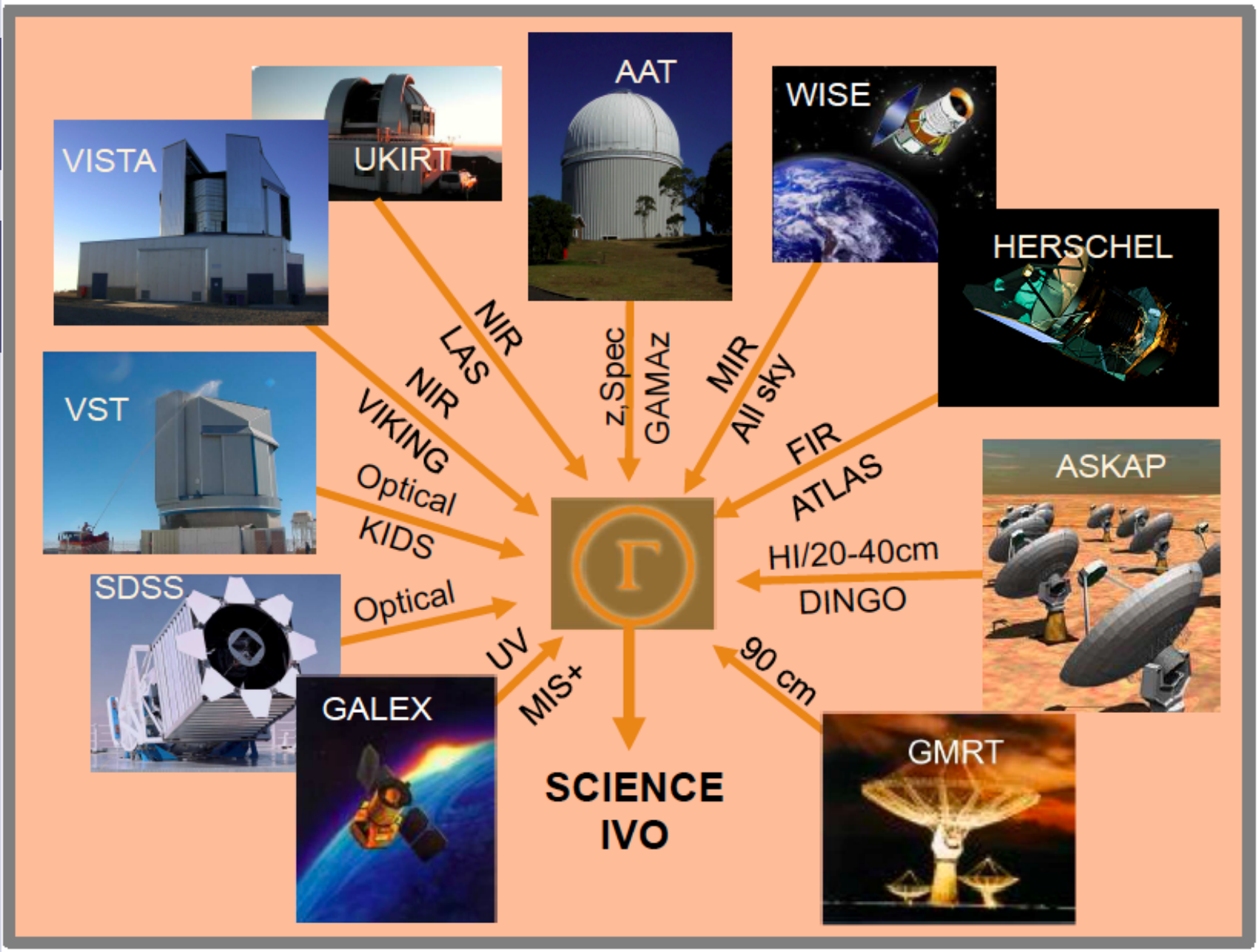





GAMA I

**G09**
**G12**
**G15**

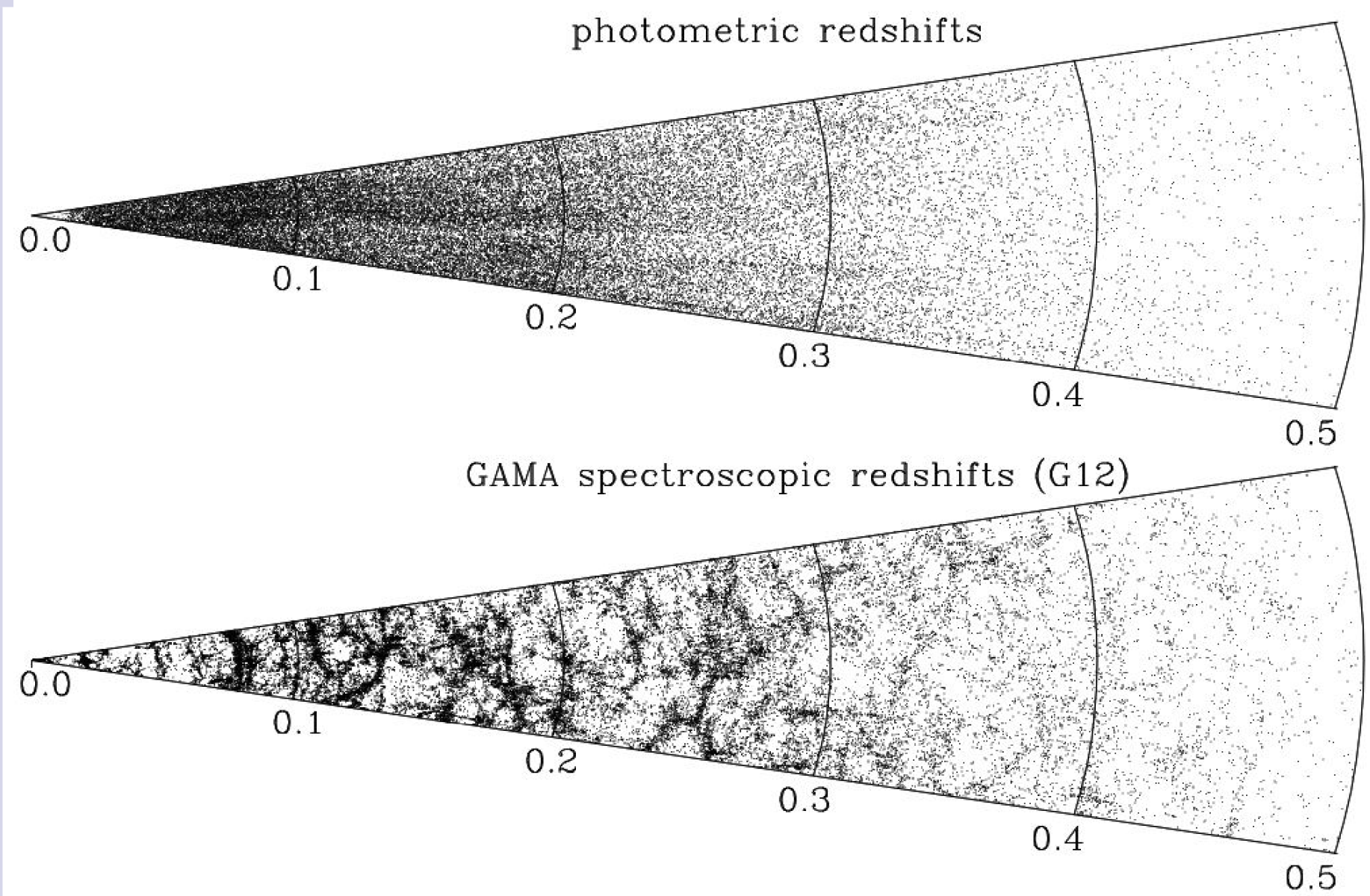
# GAMA: Contributing Facilites




Recent addition:

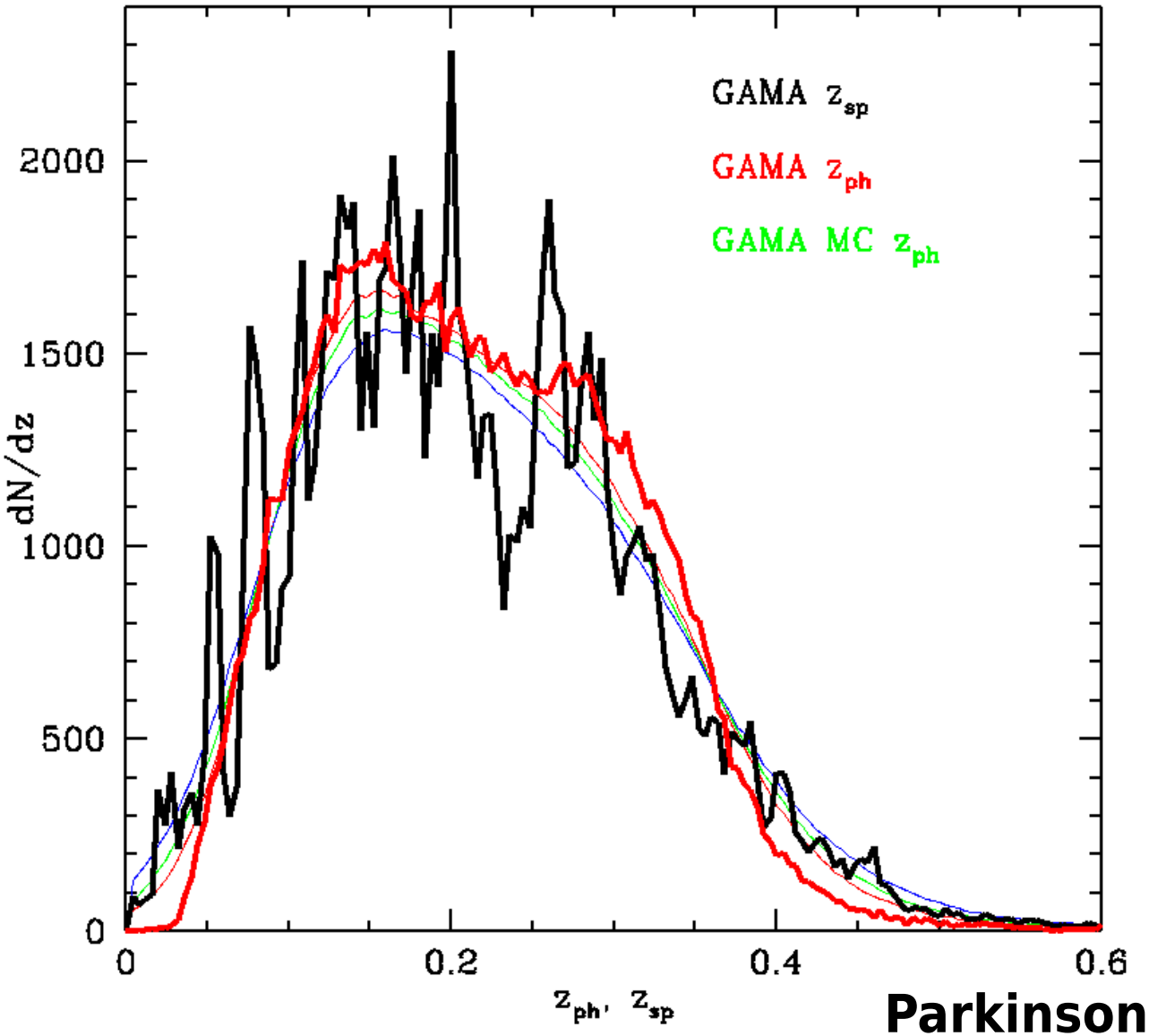
**G02 (W1) with:**
**- CFHTLenS**
**- XMM-XXL**

# GAMA: Preliminary Results
## improved photometric redshifts



# GAMA: Preliminary Results

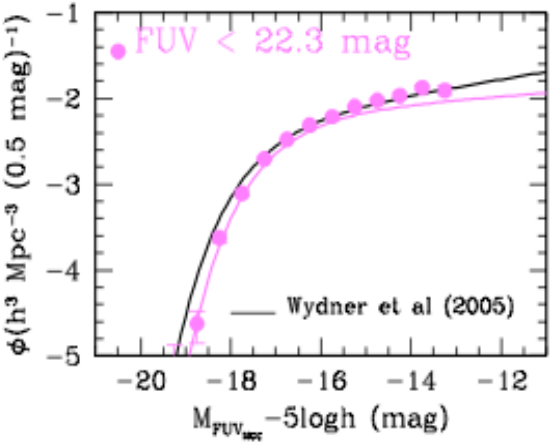
## N(z) for $z_{spec}$ and $z_{photo}$

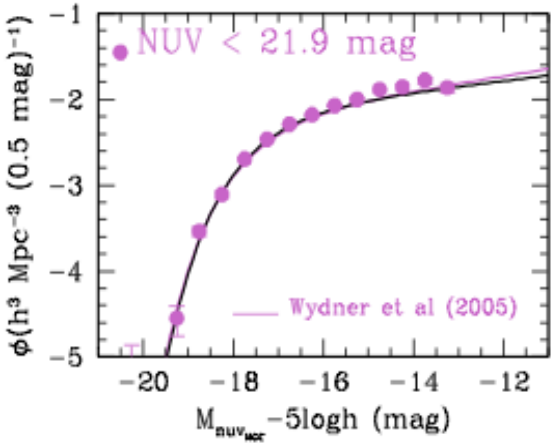



**Parkinson et al. (in prep)**

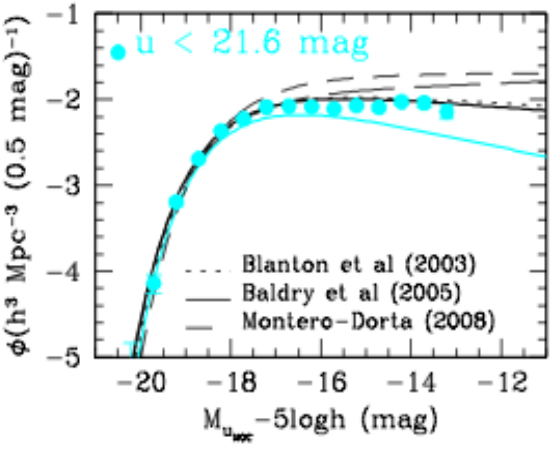
# GAMA: Preliminary Results
## 11-band galaxy luminosity function (z<0.1)

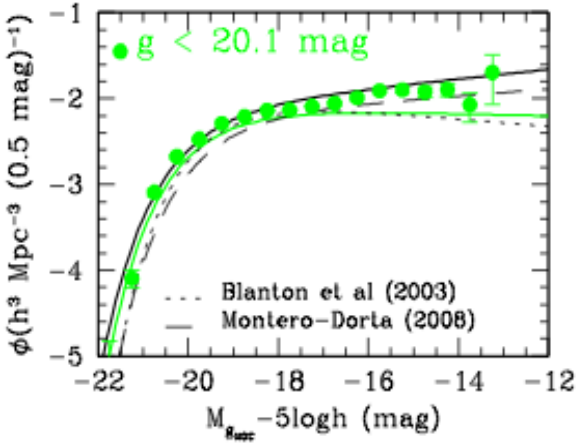
#galaxies per Volume per Magnitude

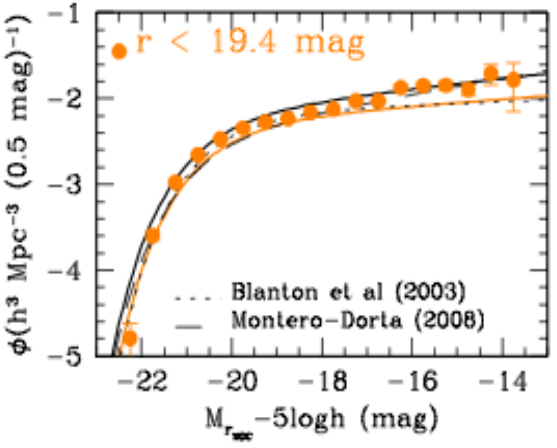



11 band luminosity functions to z < 0.1 over the common GAMA regions (115.14sq deg) to r<19.4 corrected for colour bias and incompletness



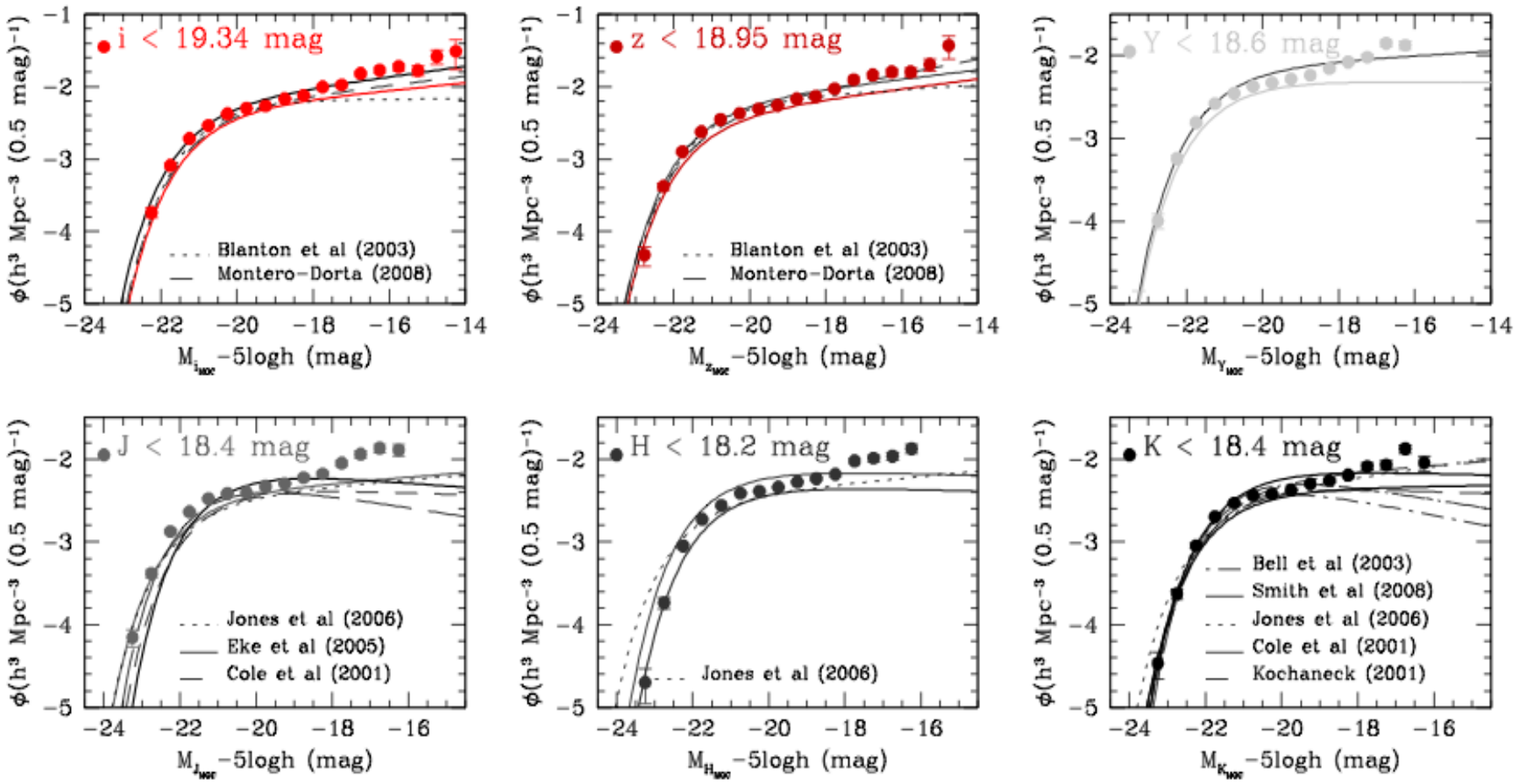




**Bright** **Abs. Mag.** **Faint**

**Driver et al. (in prep)**

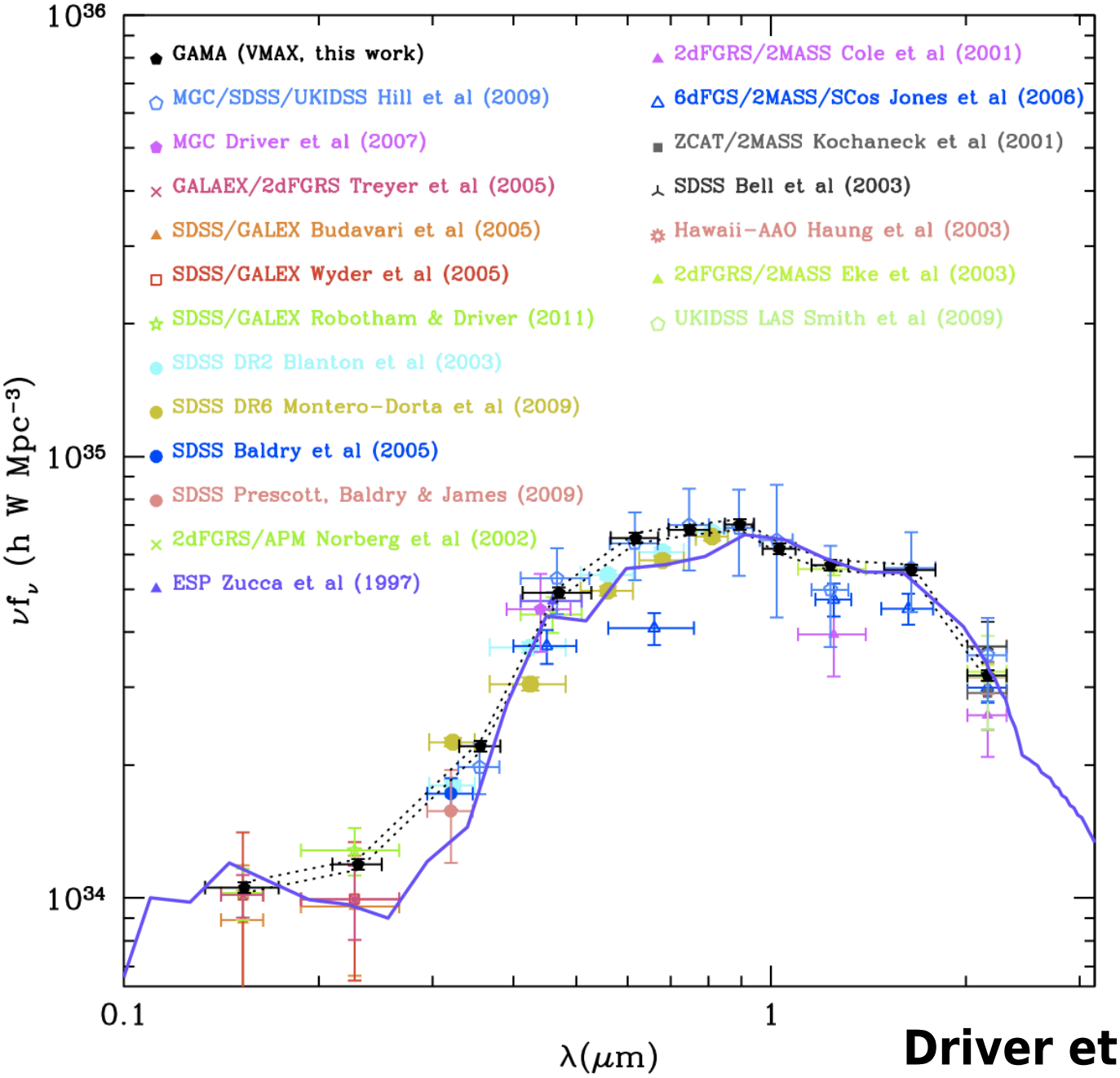
# GAMA: Preliminary Results
## 11-band galaxy luminosity function (z<0.1)




**Driver et al. (in prep)**

# GAMA: Preliminary Results

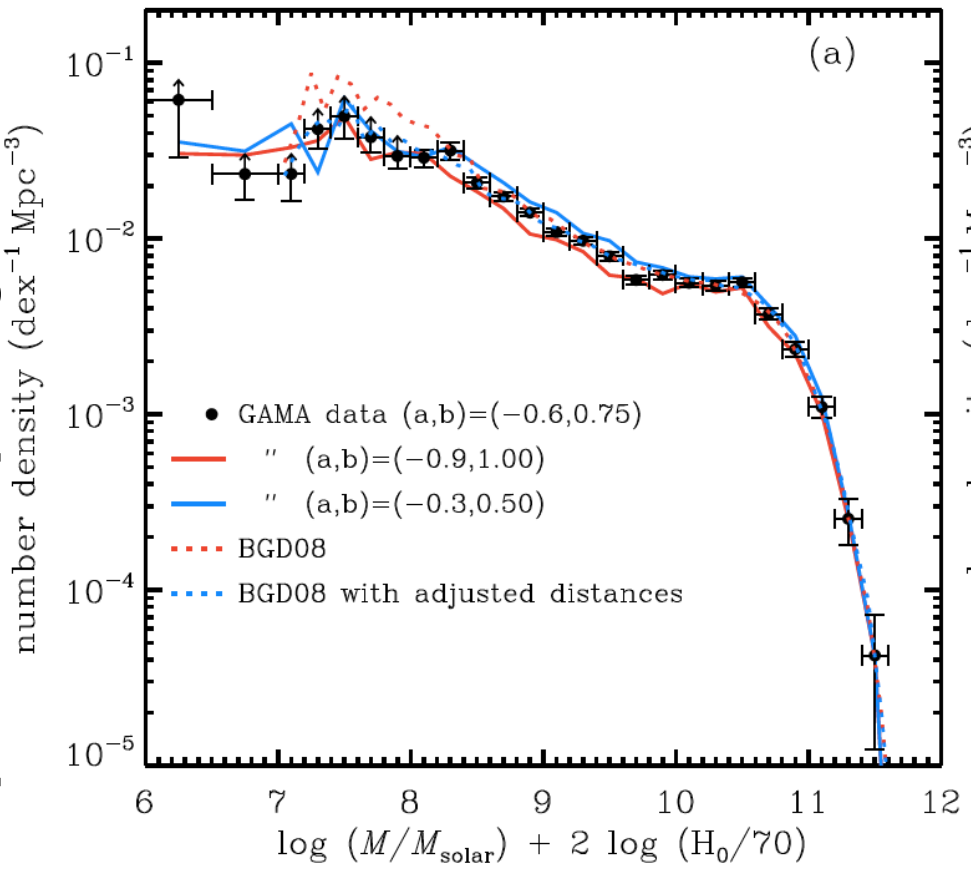
## Cosmic Spectral Energy Distribution (z<0.1)

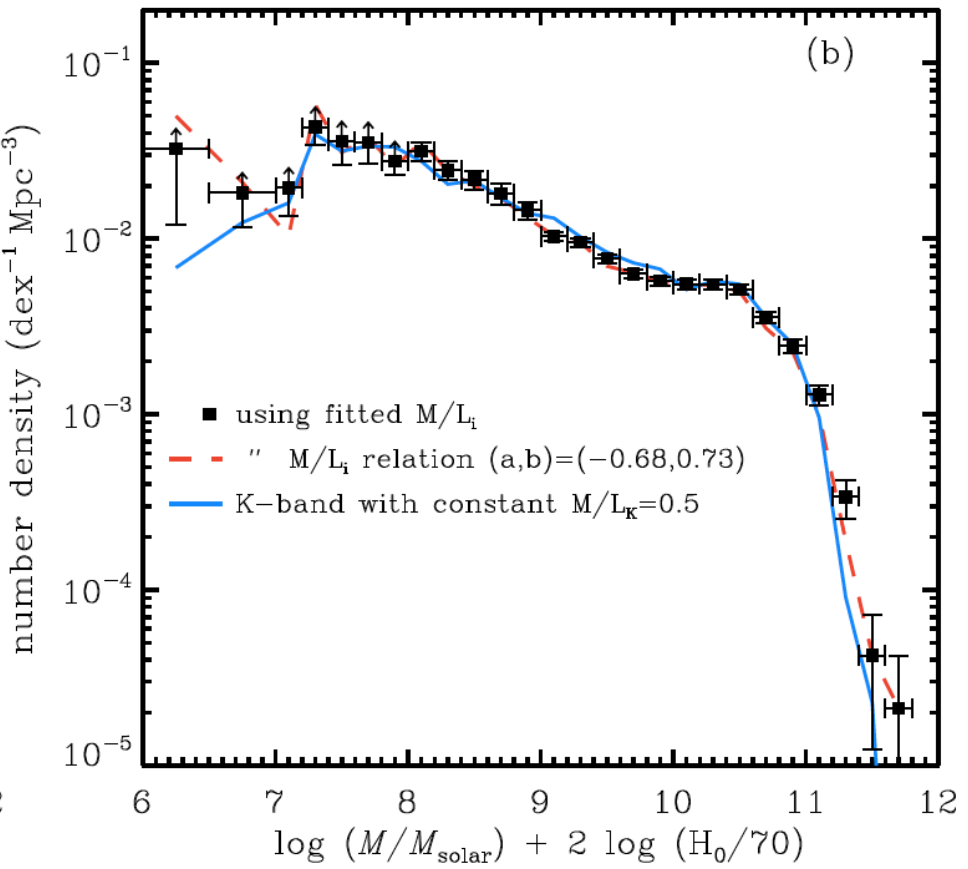



**Driver et al. (in prep)**

# GAMA: Preliminary Results
## stellar mass function (z<0.06)

**#galaxies per Volume per log Stellar Mass**



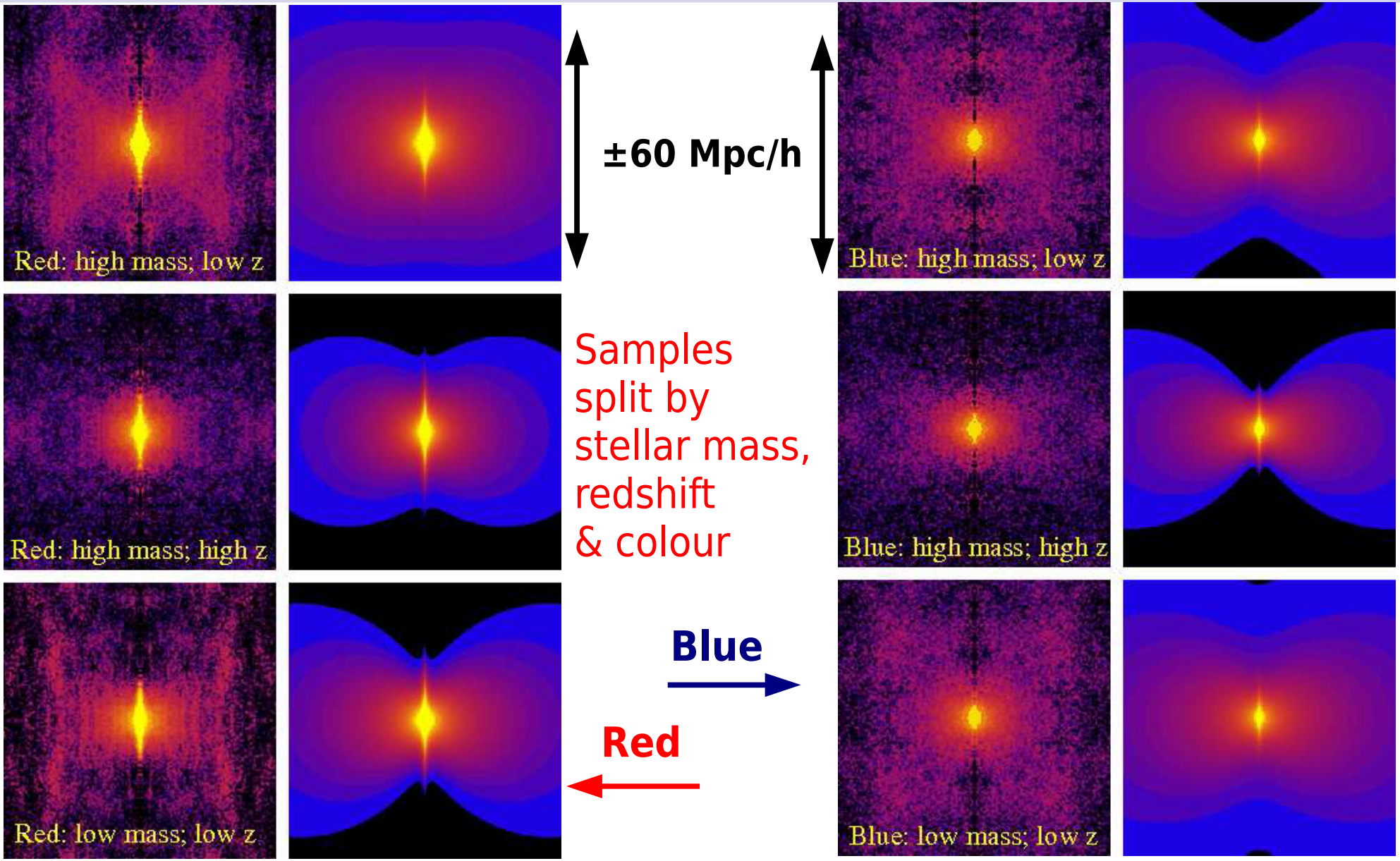

**Low** **Stellar Mass** **High**

$\mathrm{Log}_{10}\,(M/L)_i = a + b\,(g\text{-}i)$

**Baldry et al. (in prep)**

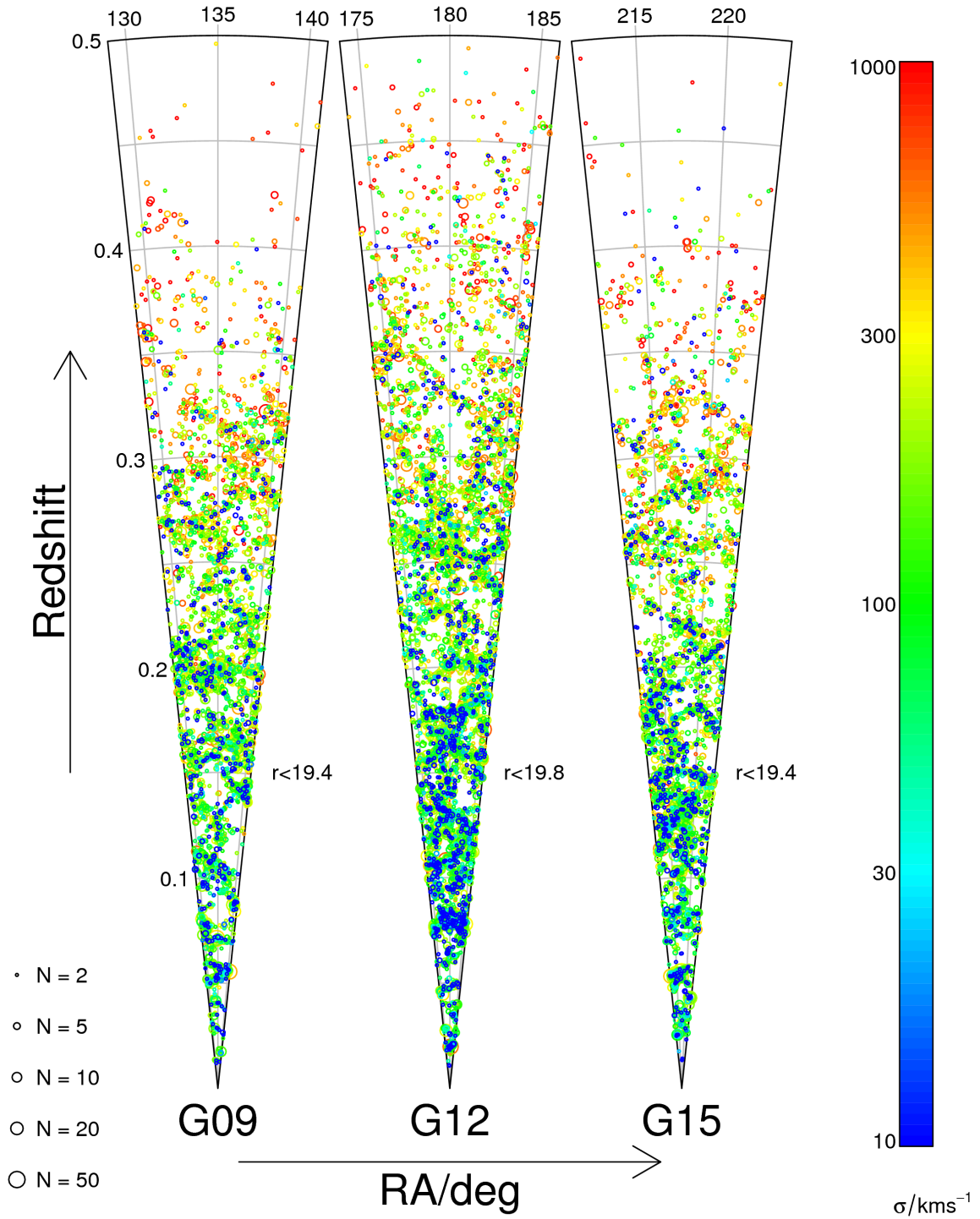
# GAMA: Preliminary Results

## Clustering & Redshift Space Distortions






**Peacock et al. (in prep)**







# GAMA: G³Cv1 coneplot

- 142 sq.deg. to r=19.4
- 12k $N_g \geq 2$ groups
- 1.5k $N_g \geq 5$ groups

**Robotham et al. (2011)**

# GAMA: THE DATABASE (I)

**All (~250k):**

General: GAMA ID : SDSS ID : **z** (heliocentric) : **z** quality

Flux: UV : optical : near-IR : mid-IR : far-IR : Radio (20,rest-21,30,40,90cm)

Shape: CAS : Sersic index: half-light radii : b/a : PA in *ugrizYJHK*

Opacity: $\tau_{UV,ugriz,YJHK}$

Spectral features: Emission: Hα,Hβ,Hγ,Hδ,OII,OIII,NII

Abs.: Dn4000,Ca4227,Hα,Hβ,Hγ,Hδ,Mgb,Fe

SFR: UV : Hα : far-IR : Radio continuum

Fossil record: Age : SFH : element abundance

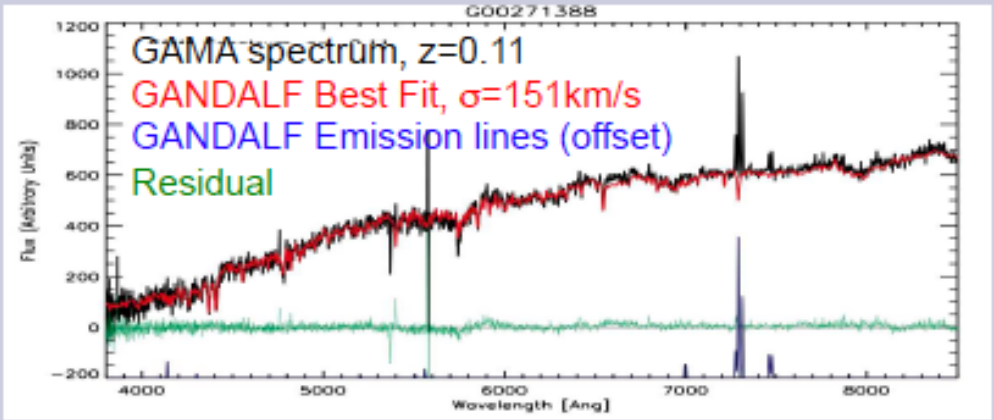
AGN: BPT diagnostics : type : strength : ionisation state

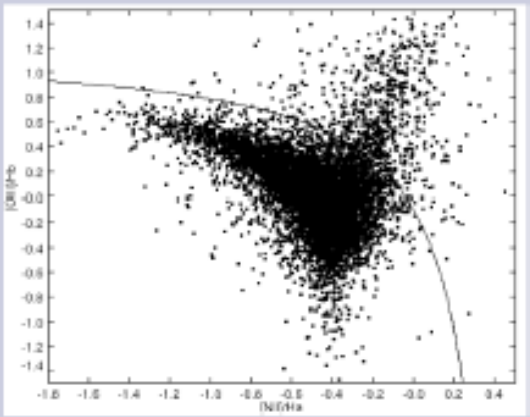
Dynamics: $\sigma_{spec}$ (GANDALF) : $W_{21}$: HI line profile

Distances: Tully-Fisher : Faber-Jackson

Masses: Stellar : SMBH : HI : Dust : Baryon : Dynamical

Environment/Halo: Local density : Group membership : Group halo mass



# GAMA: THE DATABASE (II)

**For z<0.1 (~30k):**

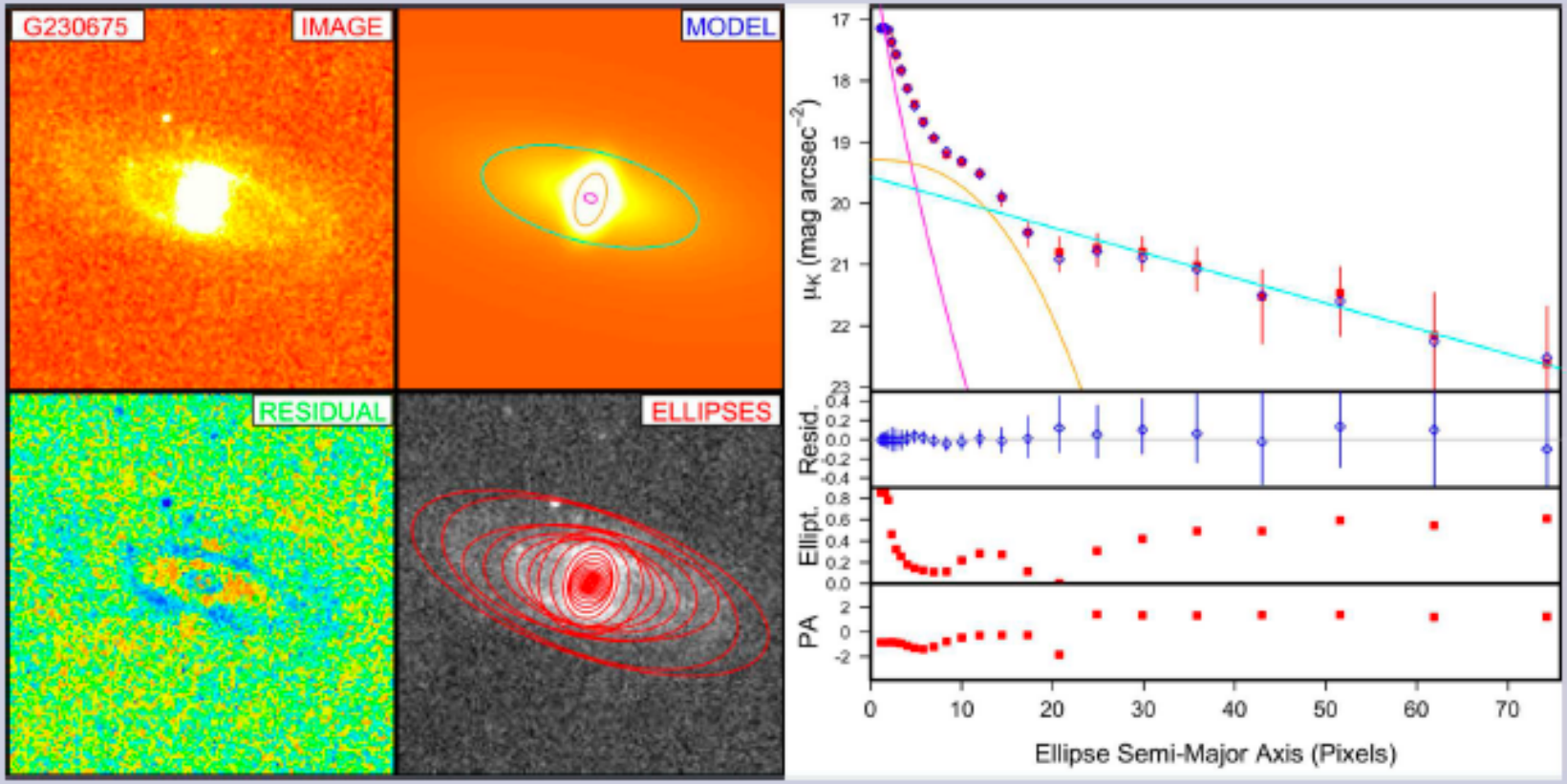
Structural: Bulge/Bar/Disc decomp. in *ugrizYJHK* (GALFIT3)

Bulge: Sersic index, half light radius, Pos. Angle, Ellipticity

Bar: Sersic index, half light radius, scale-length

Disc: Scalelength, PA, b/a

SMBH Mass: via M-σ, M-L , M-n relations



# GAMA Team


**http://www.gama-survey.org/**