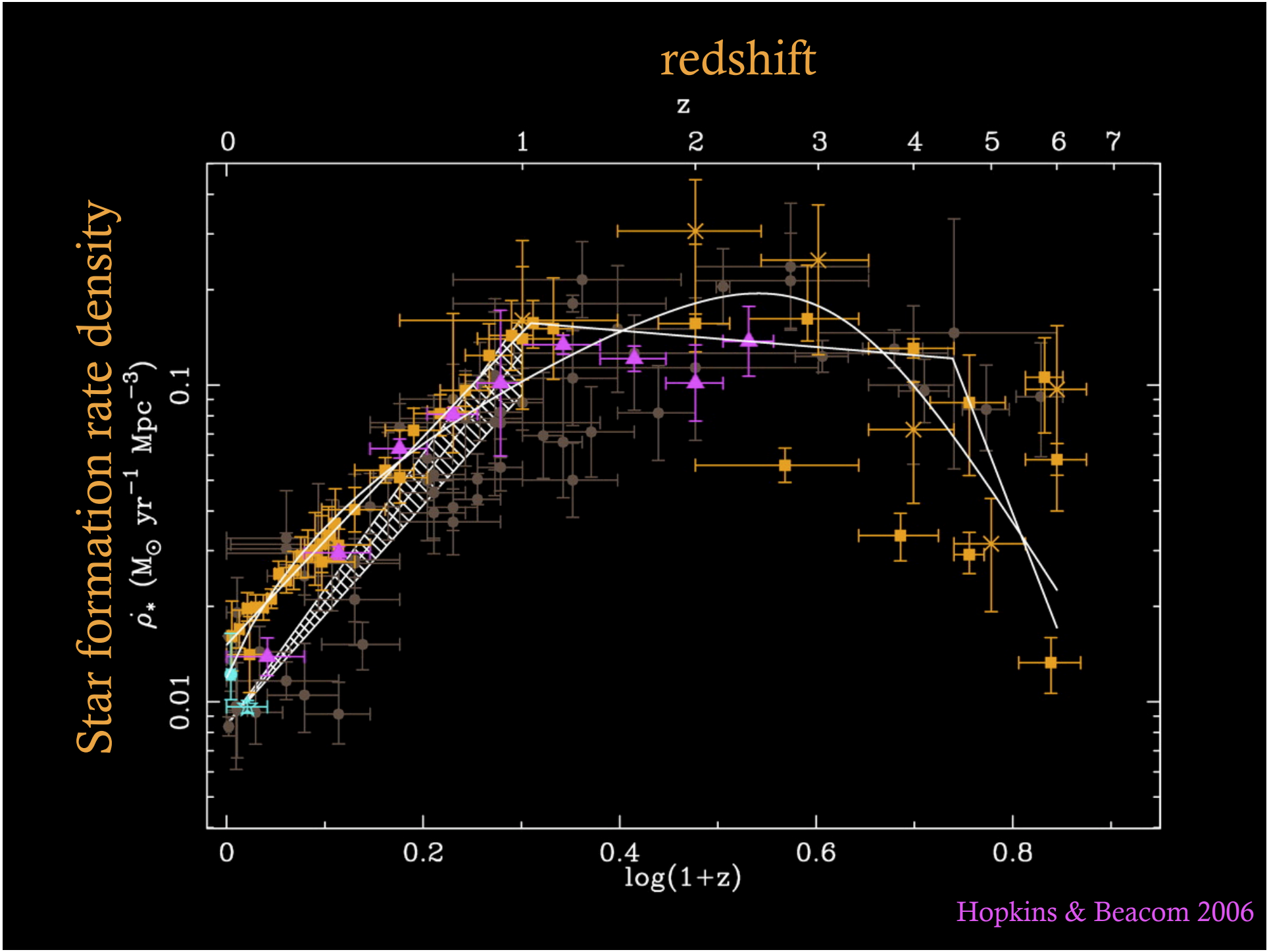
Low Mass Galaxies are *Bursting* for Attention

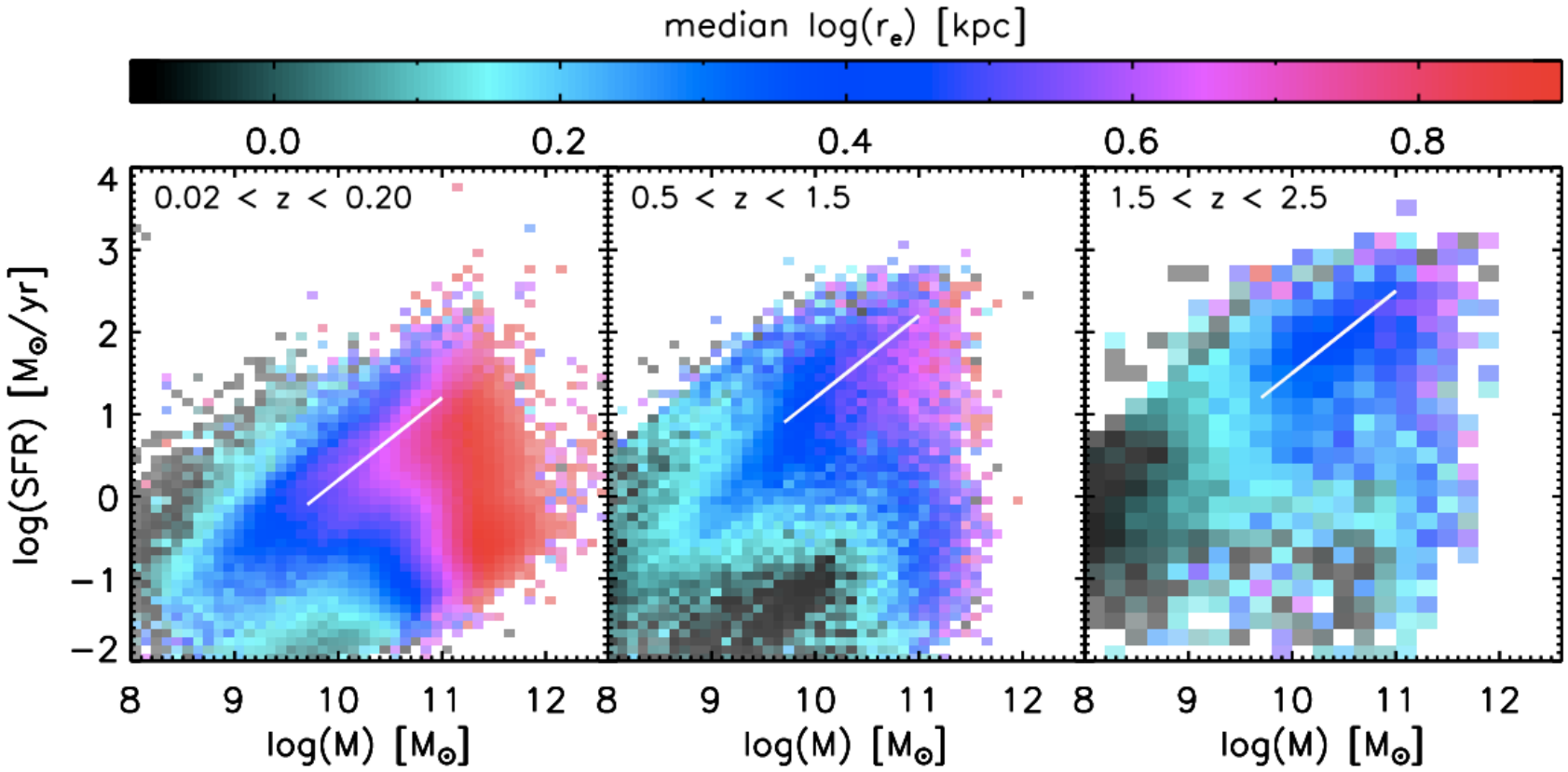
Dr Amanda E. Bauer
amanda.bauer@aao.gov.au @astropixie

Australian Government

AAO

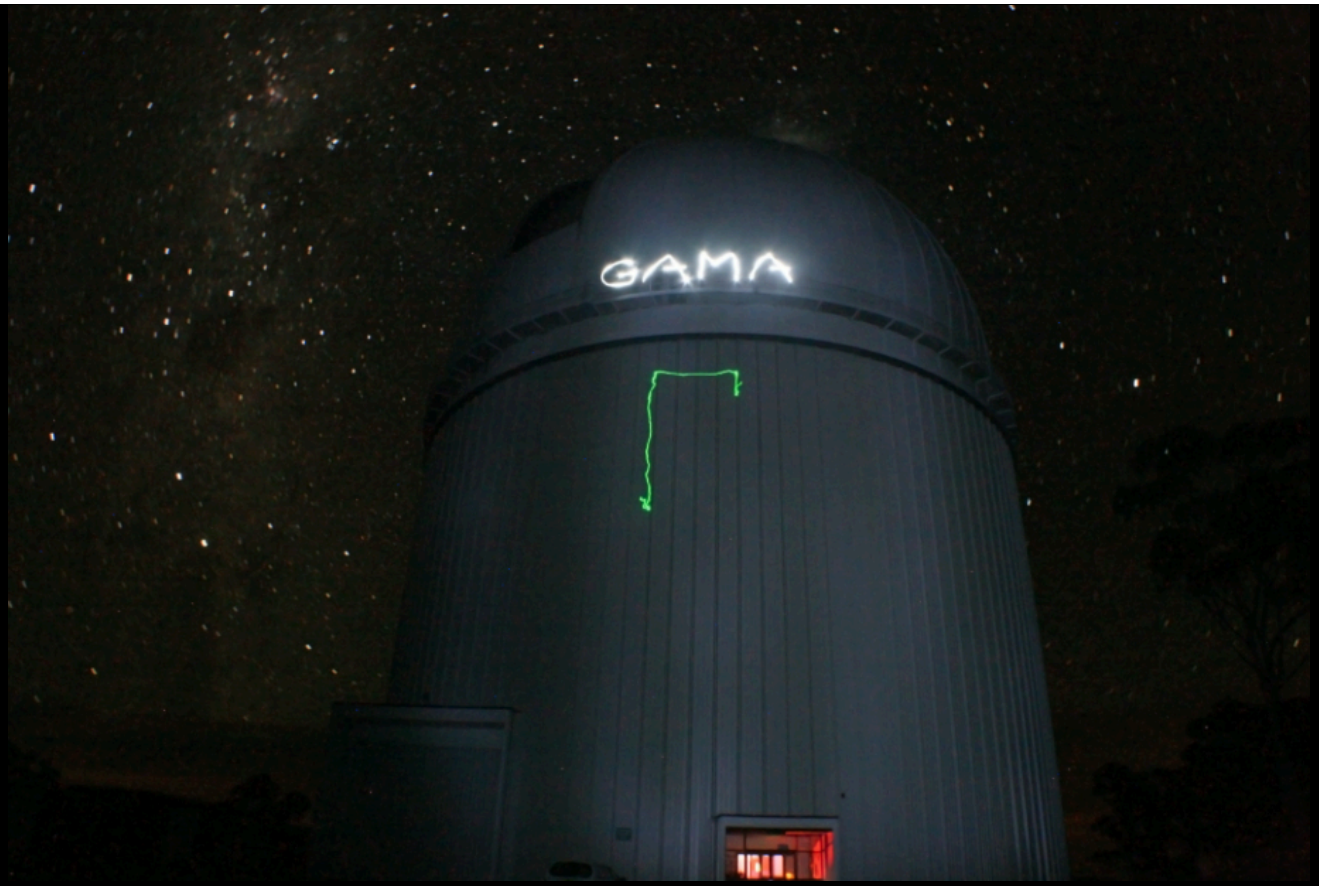

redshift
z
0
1
2
3
4
5
6
7
Star formation rate density
$\dot{\rho}_*$ ($M_\odot$ yr^{-1} Mpc^{-3})
0.1
0.01
0
0.2
0.4
0.6
0.8
log(1+z)
Hopkins & Beacom 2006

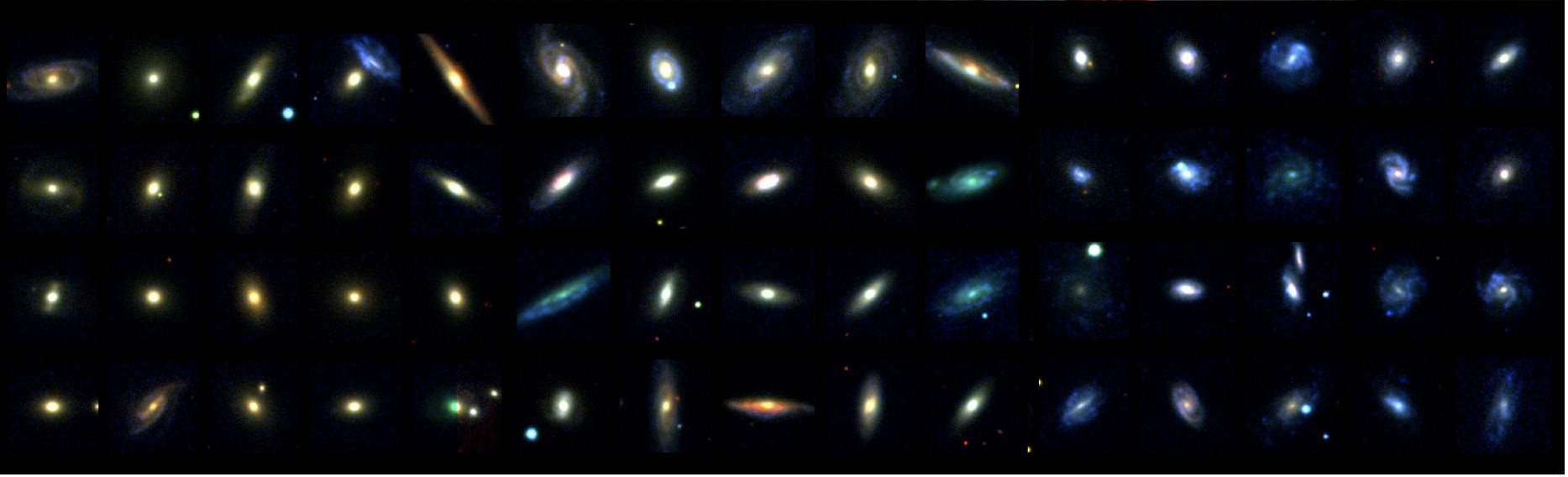
SFR increases with M* and size



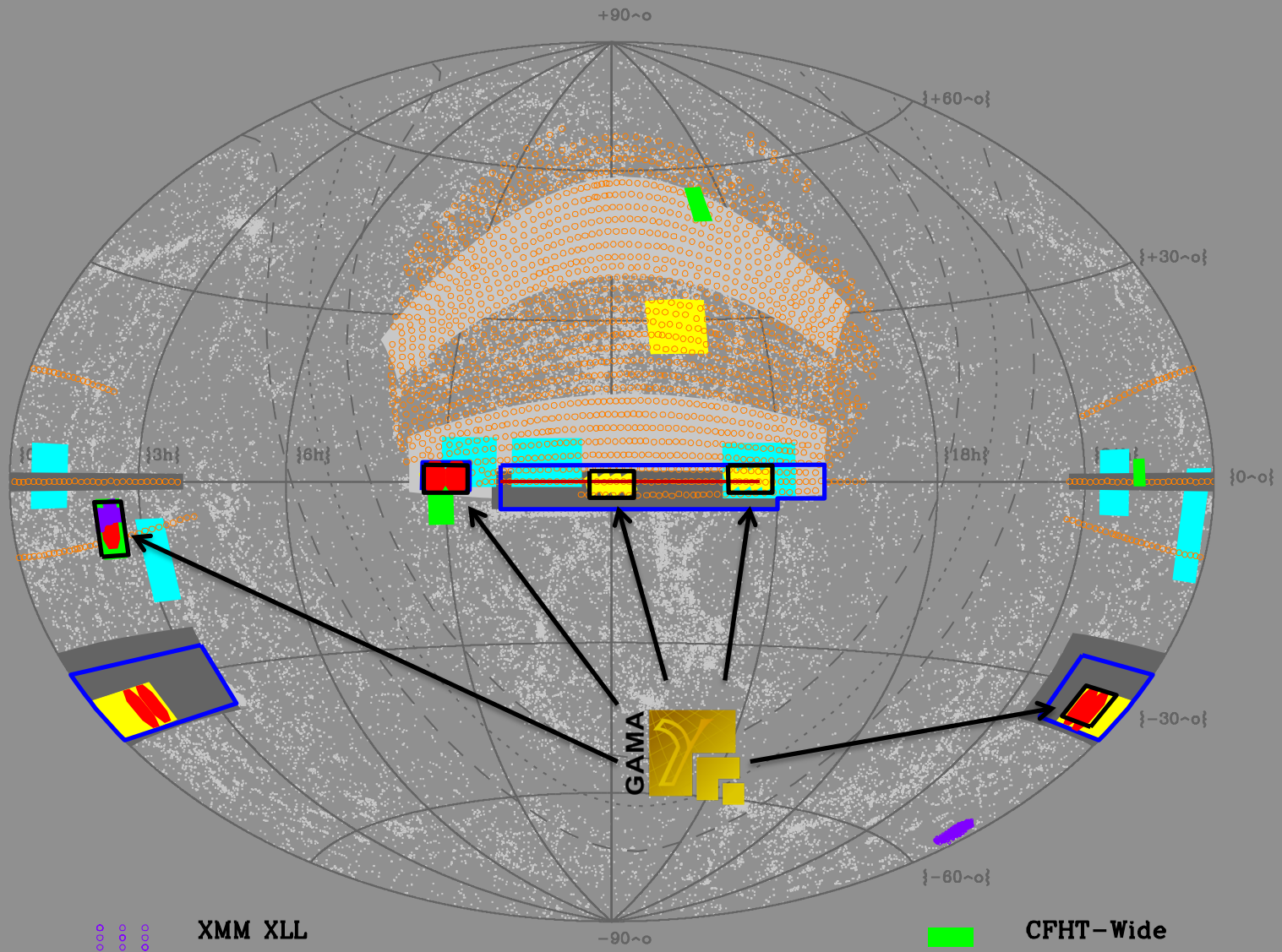
Wuyts et al. 2011

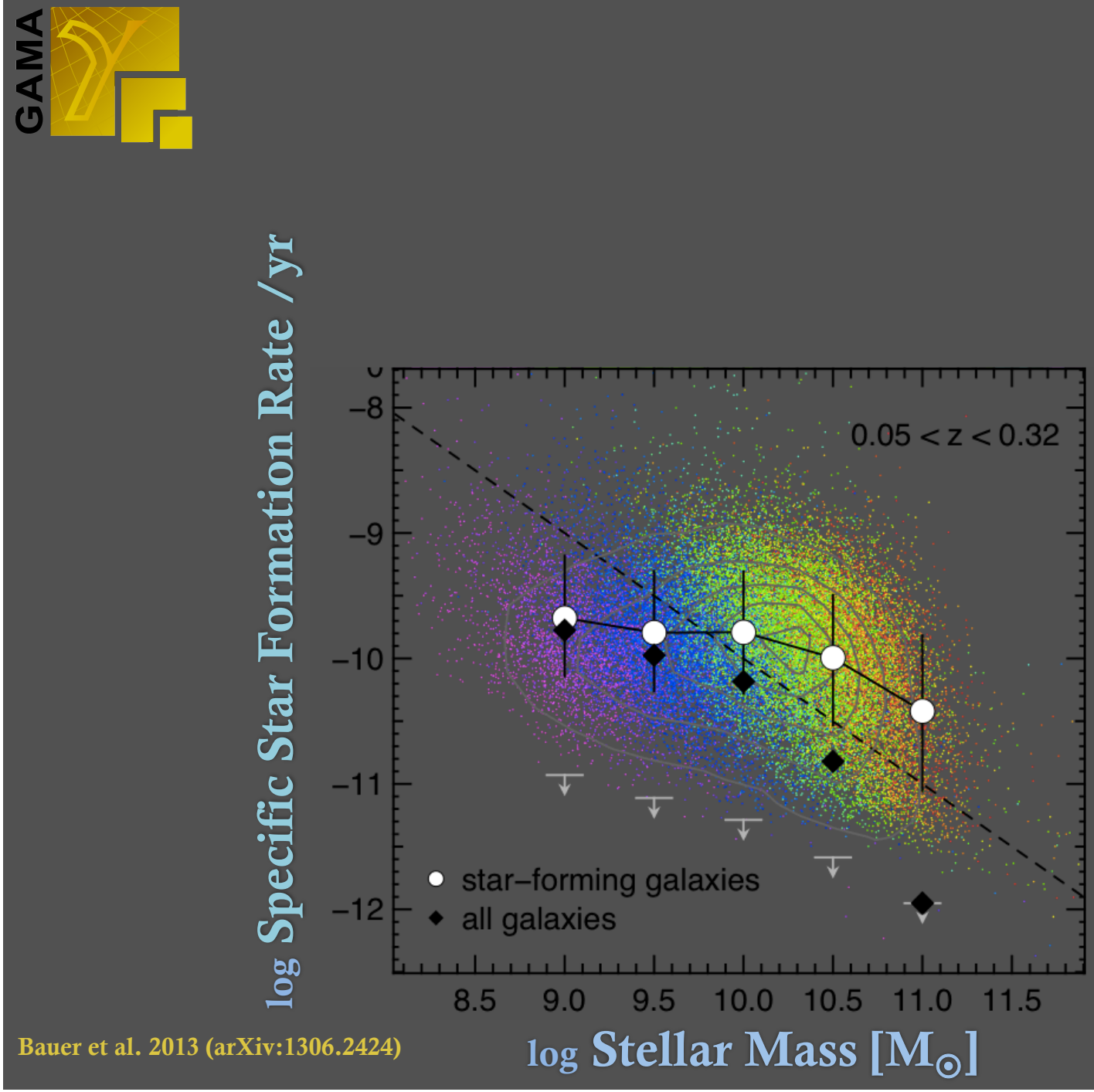
Galaxy And Mass Assembly



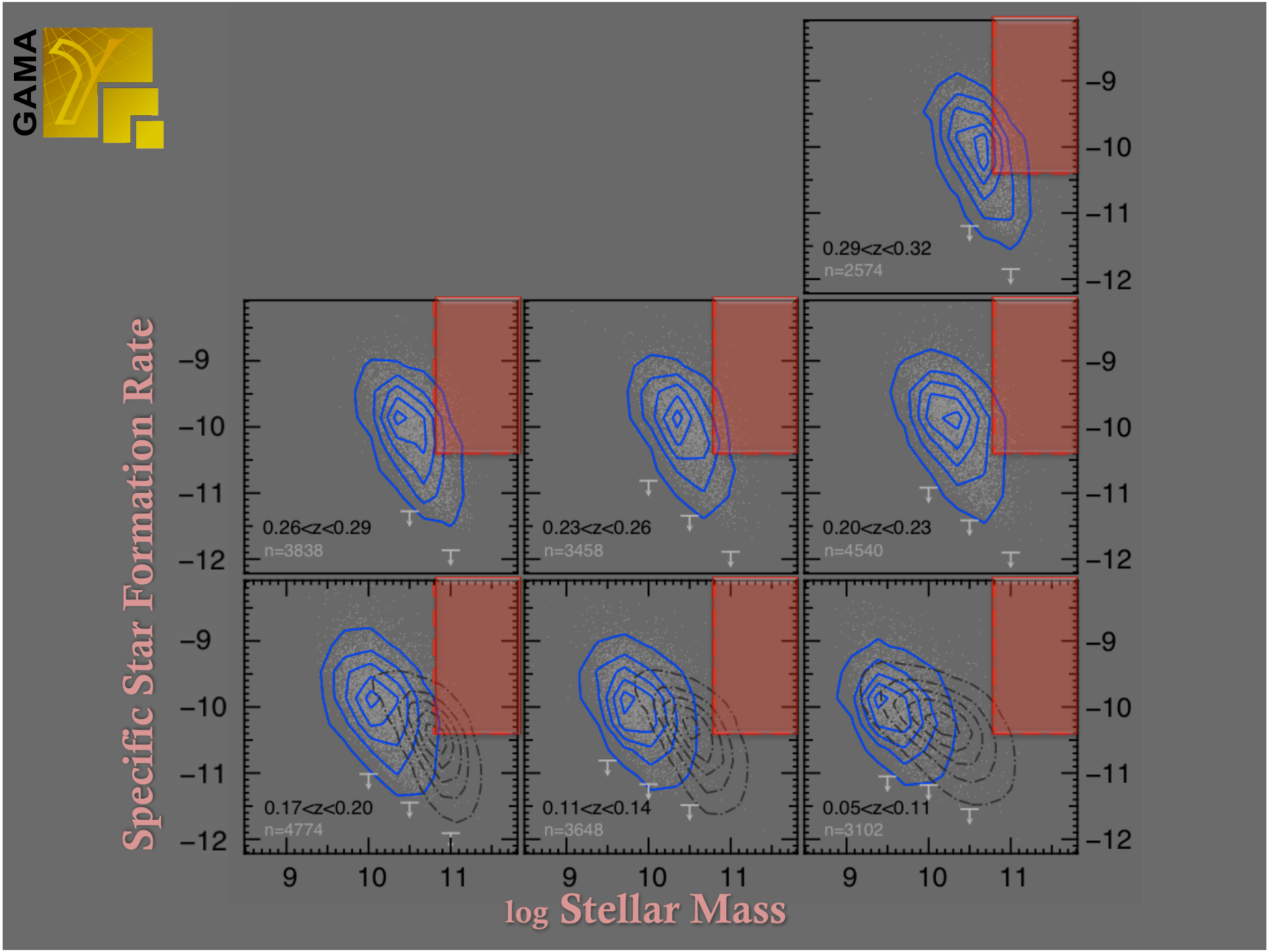


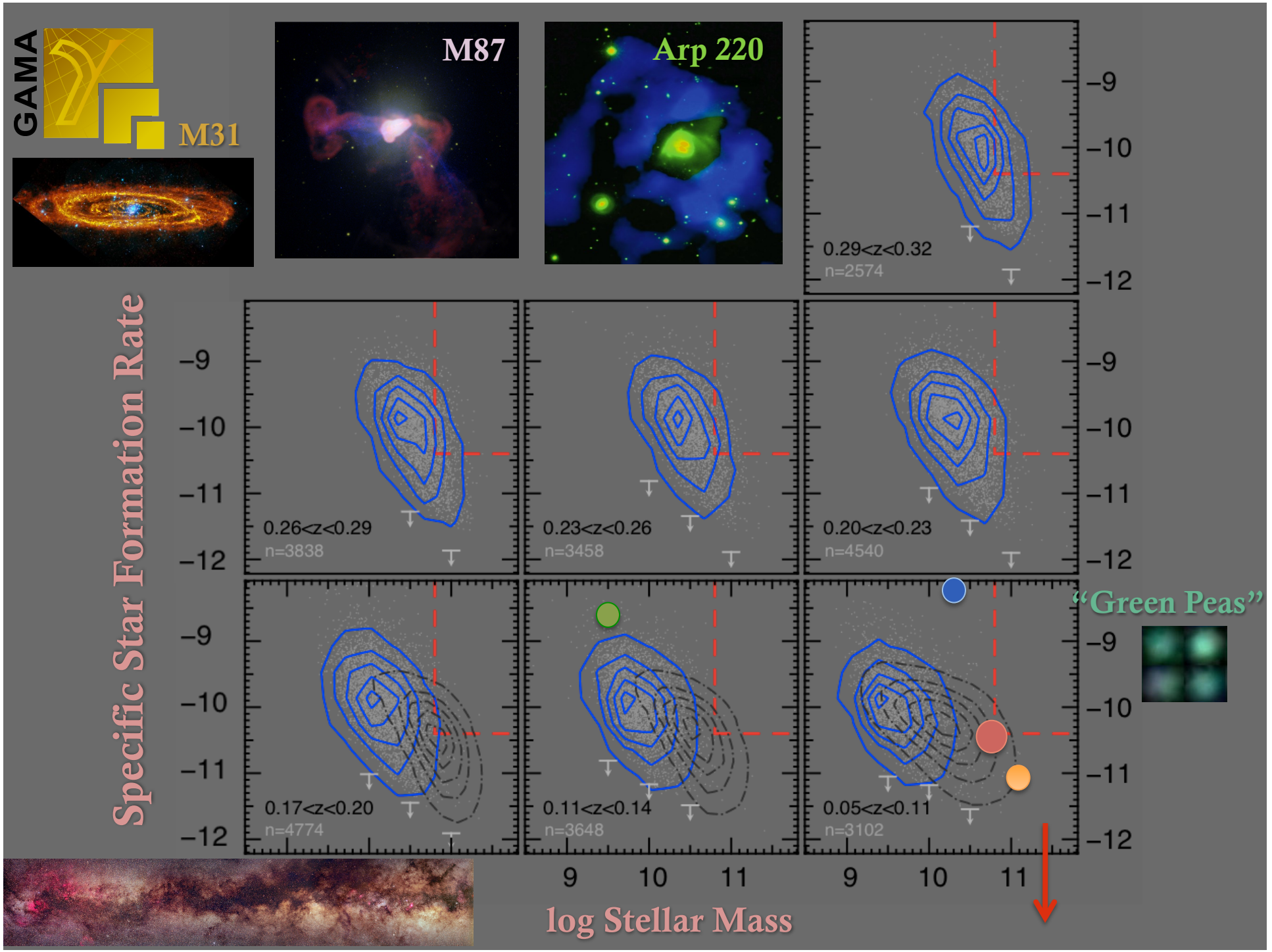
http://www.gama-survey.org/

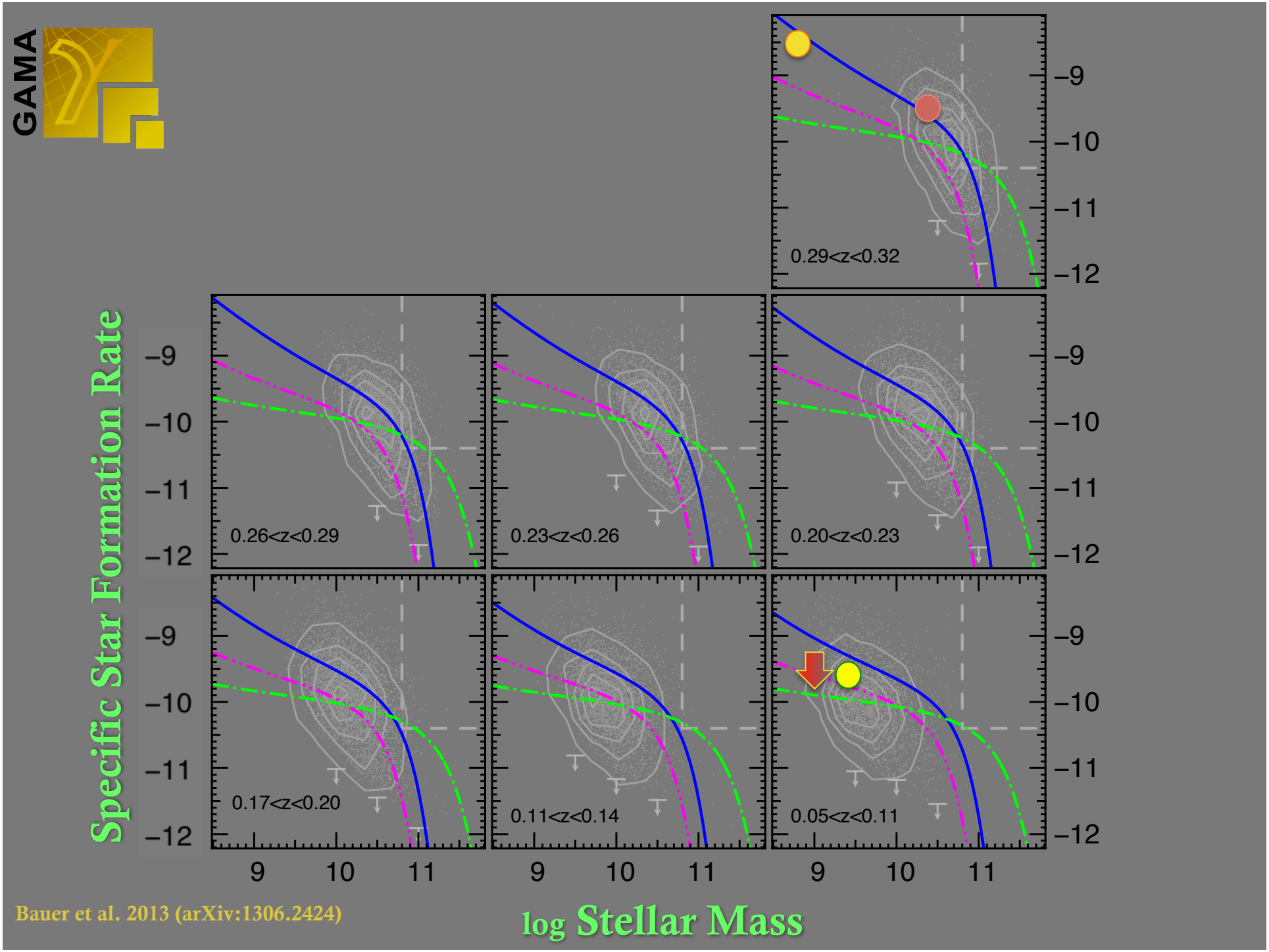




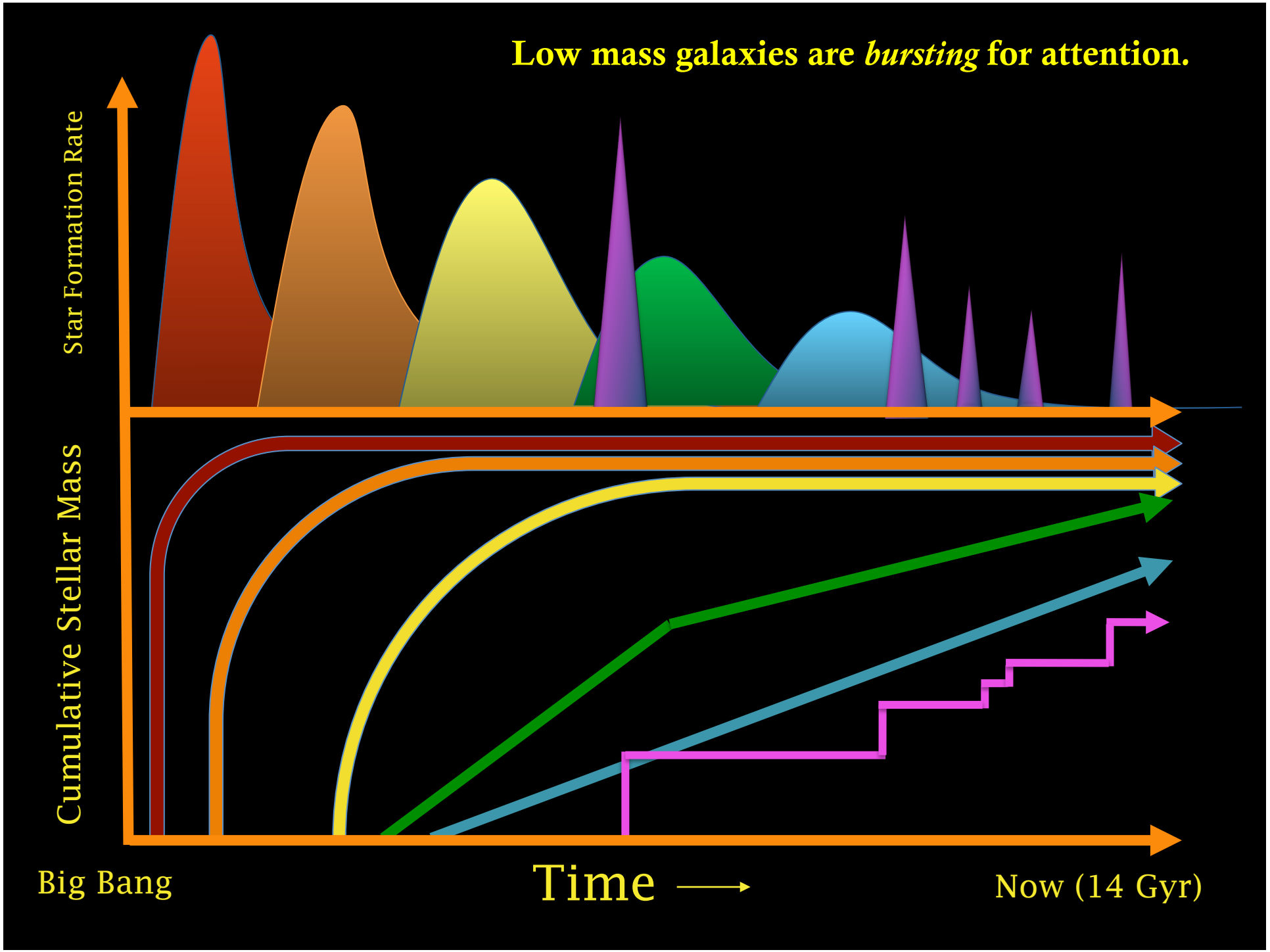
Bauer et al. 2013 (arXiv:1306.2424)

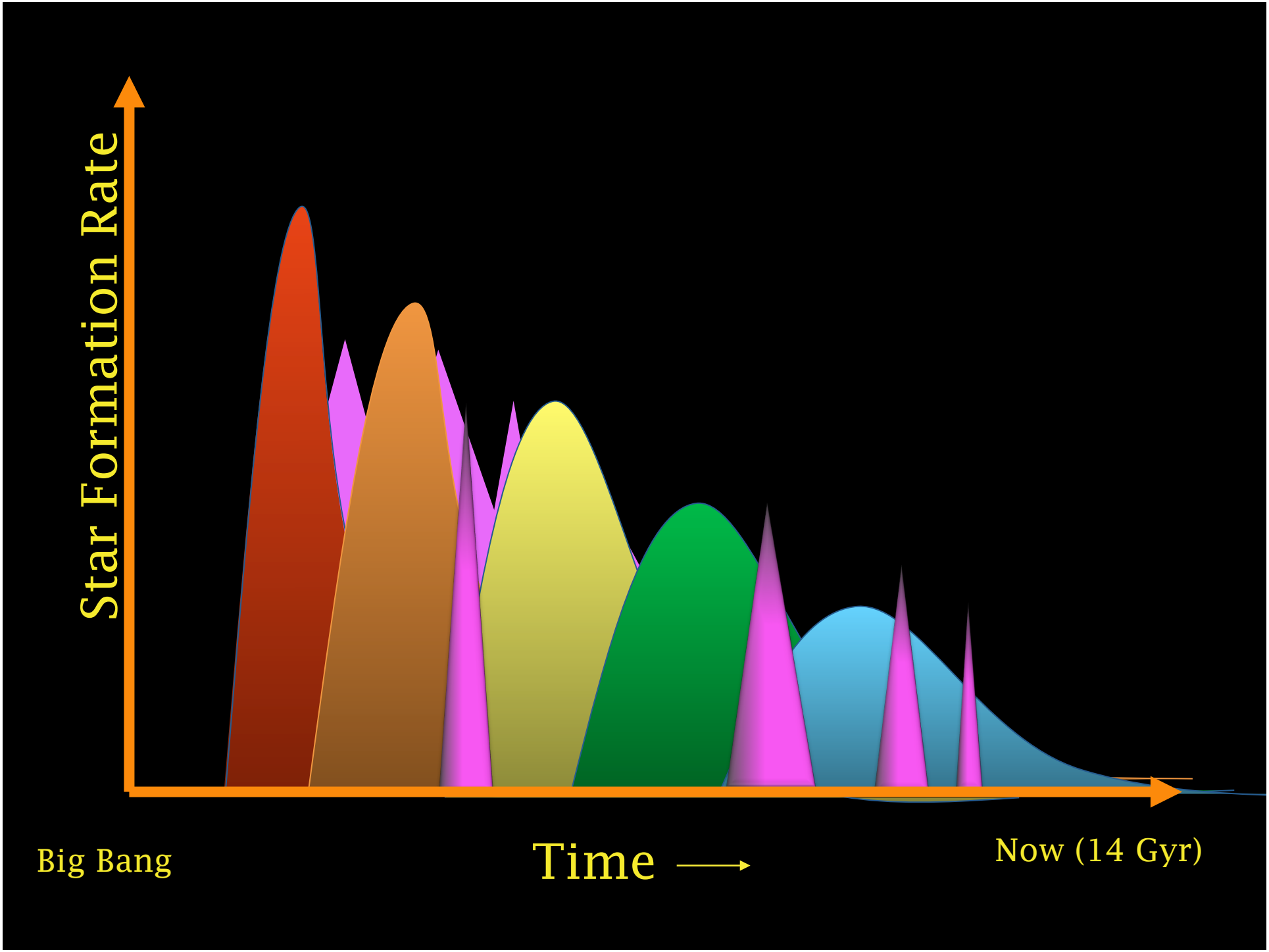

GAMA
Specific Star Formation Rate
log Stellar Mass
0.29<z<0.32
n=2574
0.26<z<0.29
n=3838
0.23<z<0.26
n=3458
0.20<z<0.23
n=4540
0.17<z<0.20
n=4774
0.11<z<0.14
n=3648
0.05<z<0.11
n=3102
−9
−10
−11
−12
9
10
11

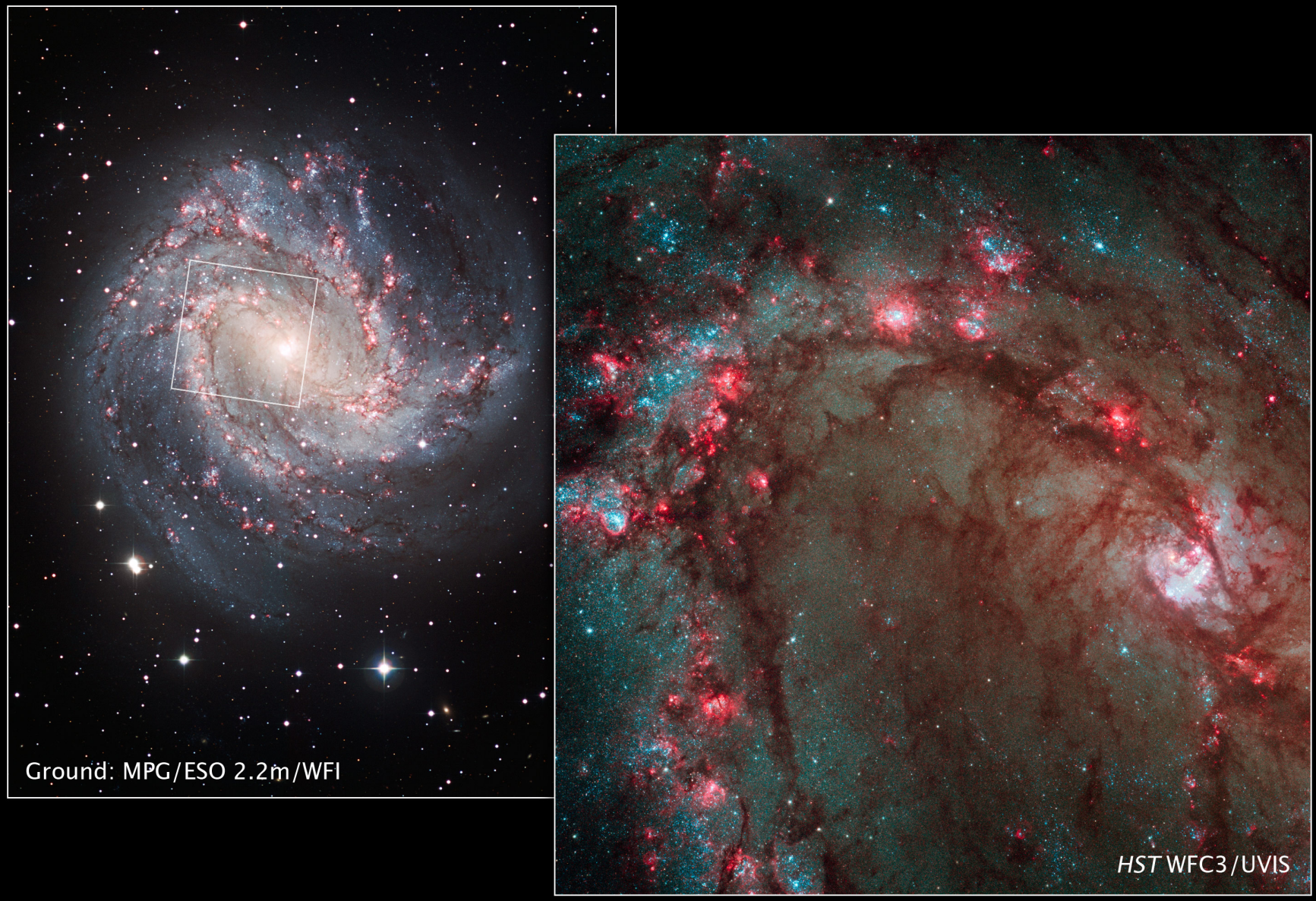

GAMA
M31
M87
Arp 220
0.29<z<0.32
n=2574
0.26<z<0.29
n=3838
0.23<z<0.26
n=3458
0.20<z<0.23
n=4540
0.17<z<0.20
n=4774
0.11<z<0.14
n=3648
0.05<z<0.11
n=3102
"Green Peas"
Specific Star Formation Rate
log Stellar Mass
−9
−10
−11
−12
9
10
11



Bauer et al. 2013 (arXiv:1306.2424)


Low mass galaxies are *bursting* for attention.
Star Formation Rate
Cumulative Stellar Mass
Big Bang
Time
Now (14 Gyr)


Star Formation Rate
Big Bang
Time
Now (14 Gyr)



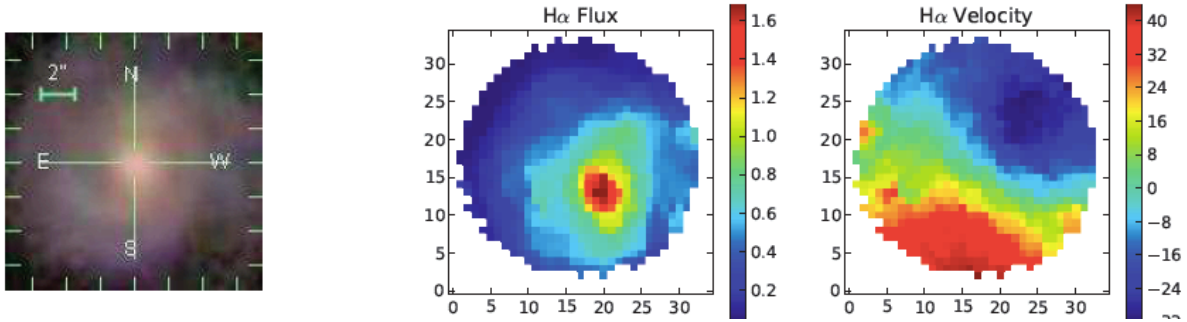
Spiral Galaxy M83

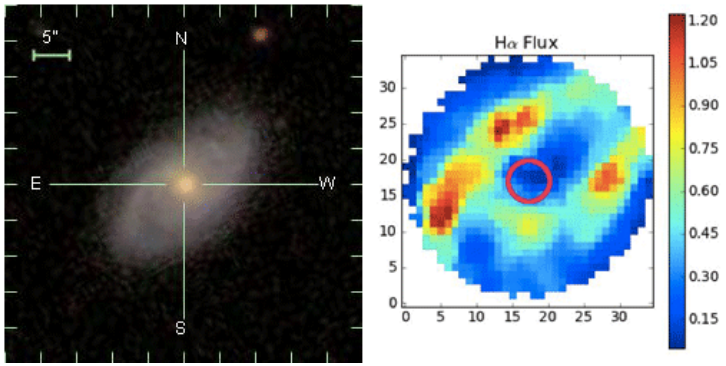
Hubble Space Telescope ▪ WFC3/UVIS

NASA, ESA, R. O'Connell (University of Virginia), the WFC3 Science Oversight Committee, and ESO

STScI-PRC09-29

Integral Field Spectroscopy with SAMI





Fogarty et al. 2012
Croom et al. 2012

http://mygalaxies.co.uk/

Steven Bamford

GAMA

- SSFRs decrease with increasing M_* (not constant)
- upper envelope of SSFR vs M_* decreases with redshift
- GAMA galaxies have higher SSFRs than predicted by simple SFH from $z = 1$
- Low mass galaxies are *bursting* for attention.
  because of individual star-forming regions

Bauer et al. 2013 (arXiv:1306.2424)

Dr Amanda E. Bauer
amanda.bauer@aao.gov.au
@astropixie

Australian Government
Department of Innovation
Industry, Science and Research