

AGN and the Build up of the Red Sequence: Results from Subaru Medium Band Imaging of the ECDFS

Carie Cardamone

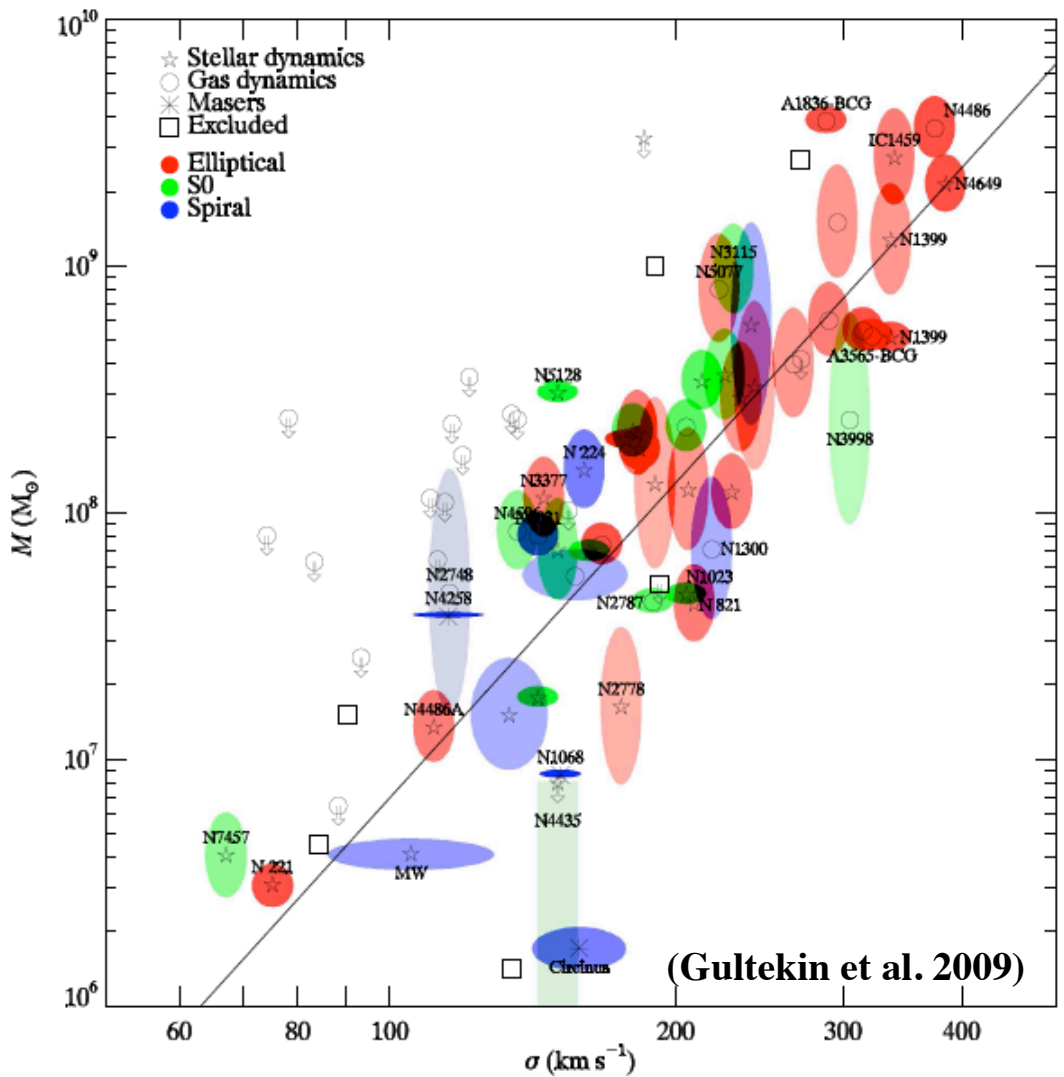
Yale University

Chandra's First Decade of Discovery

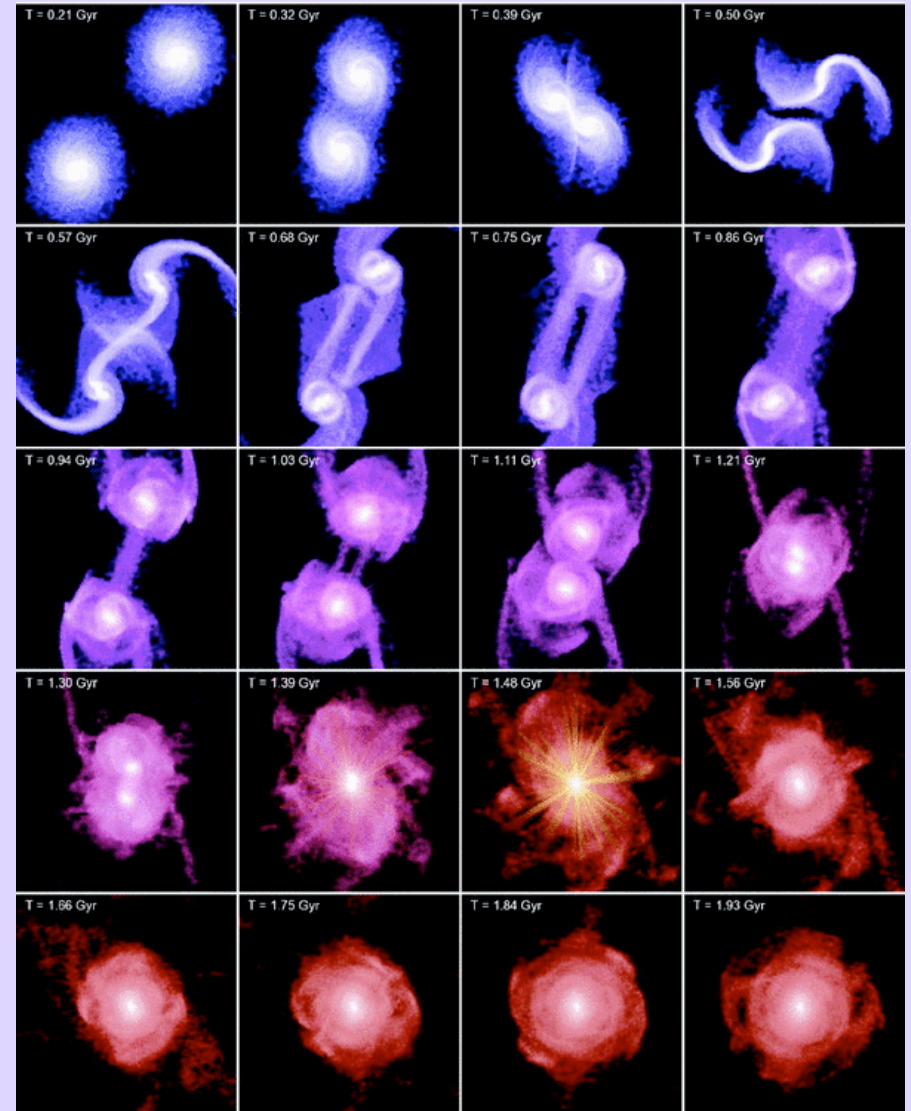
C. M. Urry, P. van Dokkum, S. Virani, K. Schawinski, E. Gawiser,
G. Brammer, N. Taylor, E. Triester, Y. Taniguchi, M. Kriek

AGN - Galaxy Connection

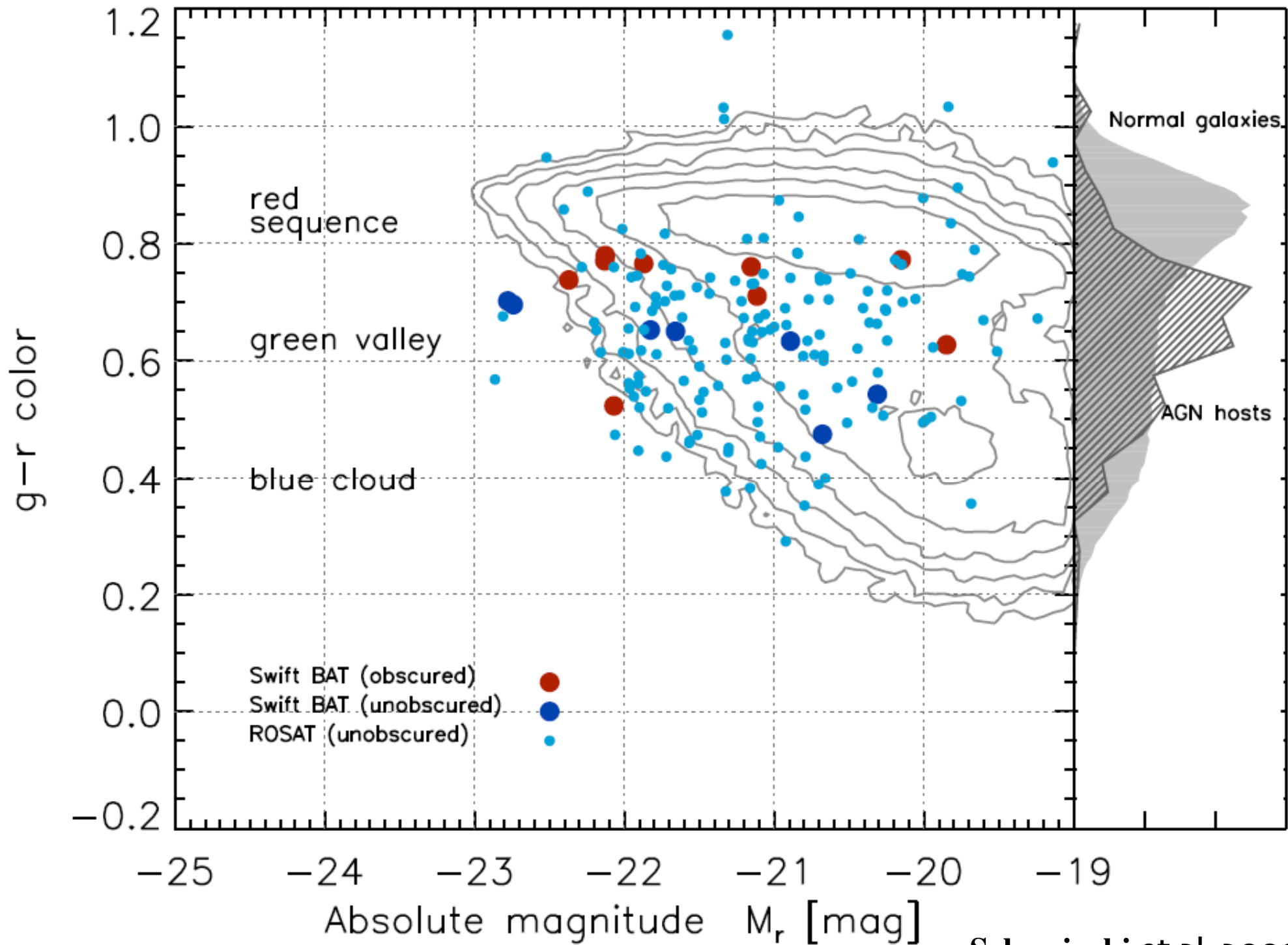
related formation mechanism?

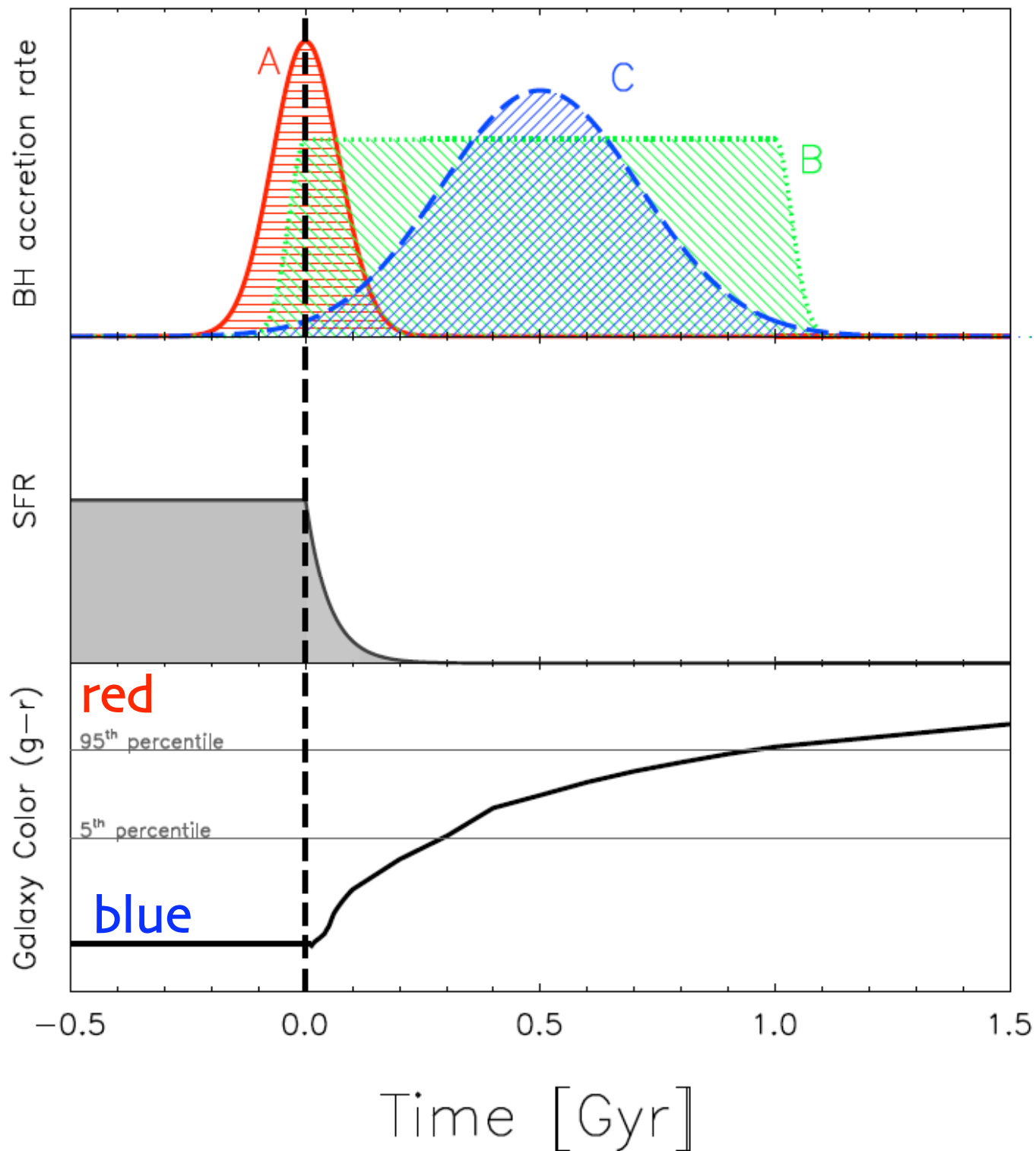


(Ferrarese & Merritt 2000, Gebhardt et al. 2000)



(Hopkins et al. 2006)





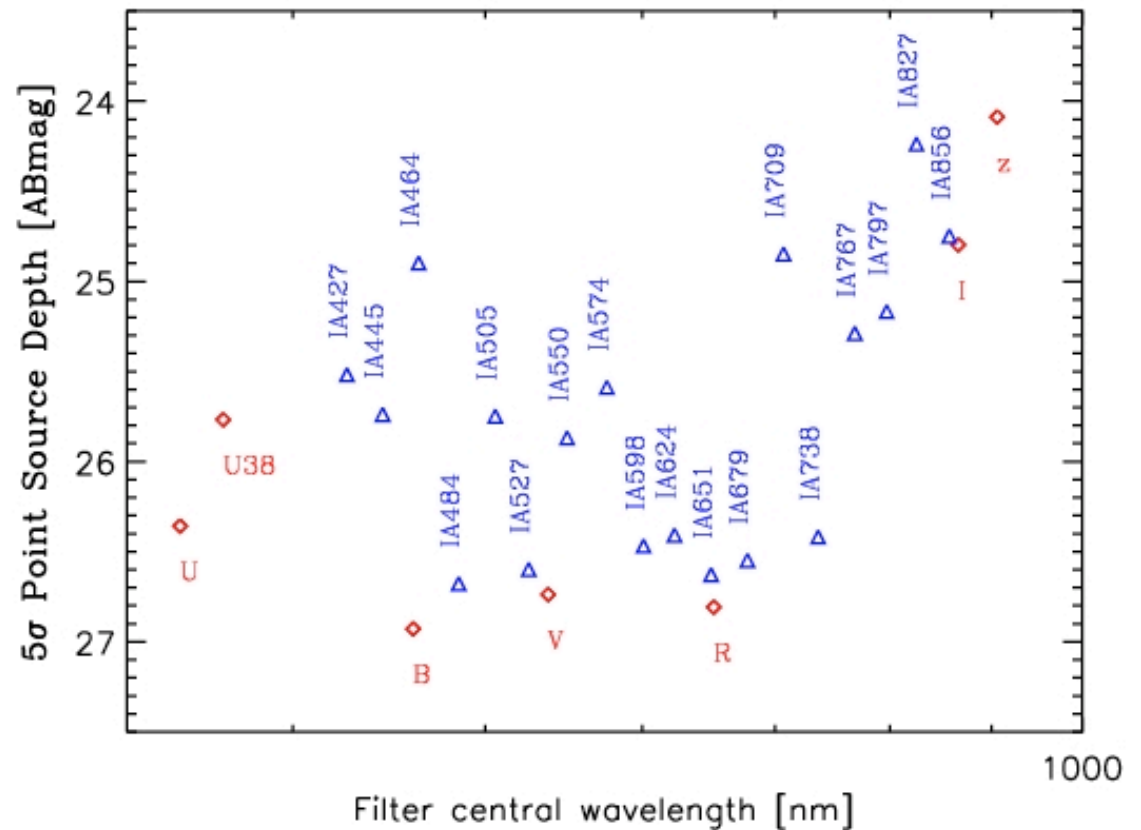
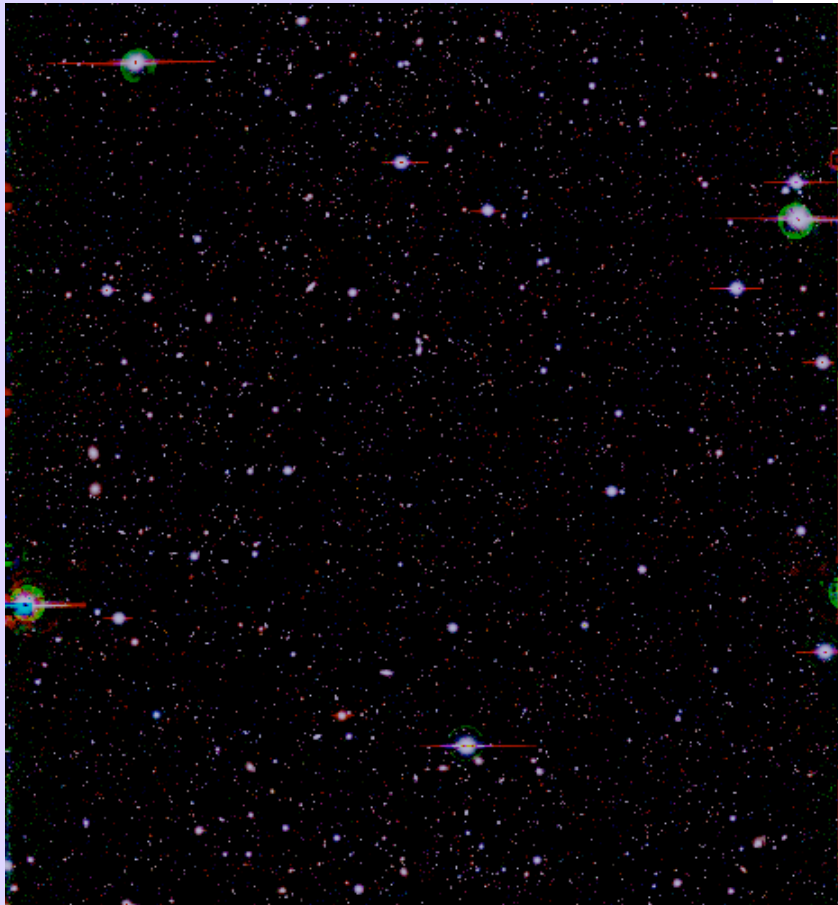
A
 short lived QSO
 instantly suppresses
 SF

B
 AGN quickly
 suppresses SF
 but lives for > 1 Gyr

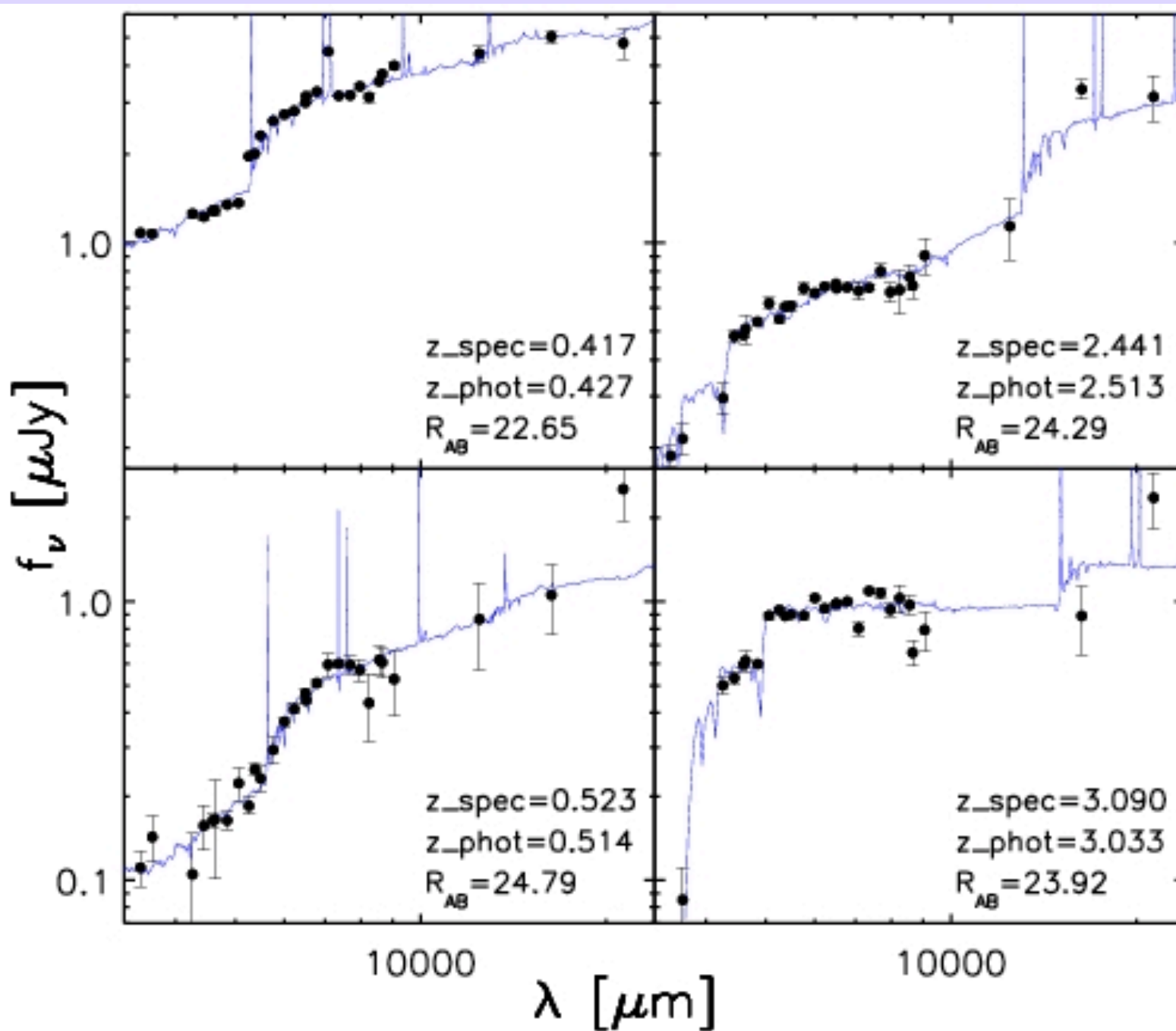
C
 Moderate luminosity
 AGN peaks several
 100 Myrs post-SF
 suppression

Survey Design

We imaged the ECDF-S with the Subaru
Telescope through 18 medium-band filters
(with Y. Taniguchi, S. Sasaki)



Low Resolution Spectrum



EAZY¹ Photometric z

$$\frac{\Delta z}{1 + z_{spec}}$$

0.1 < z < 5

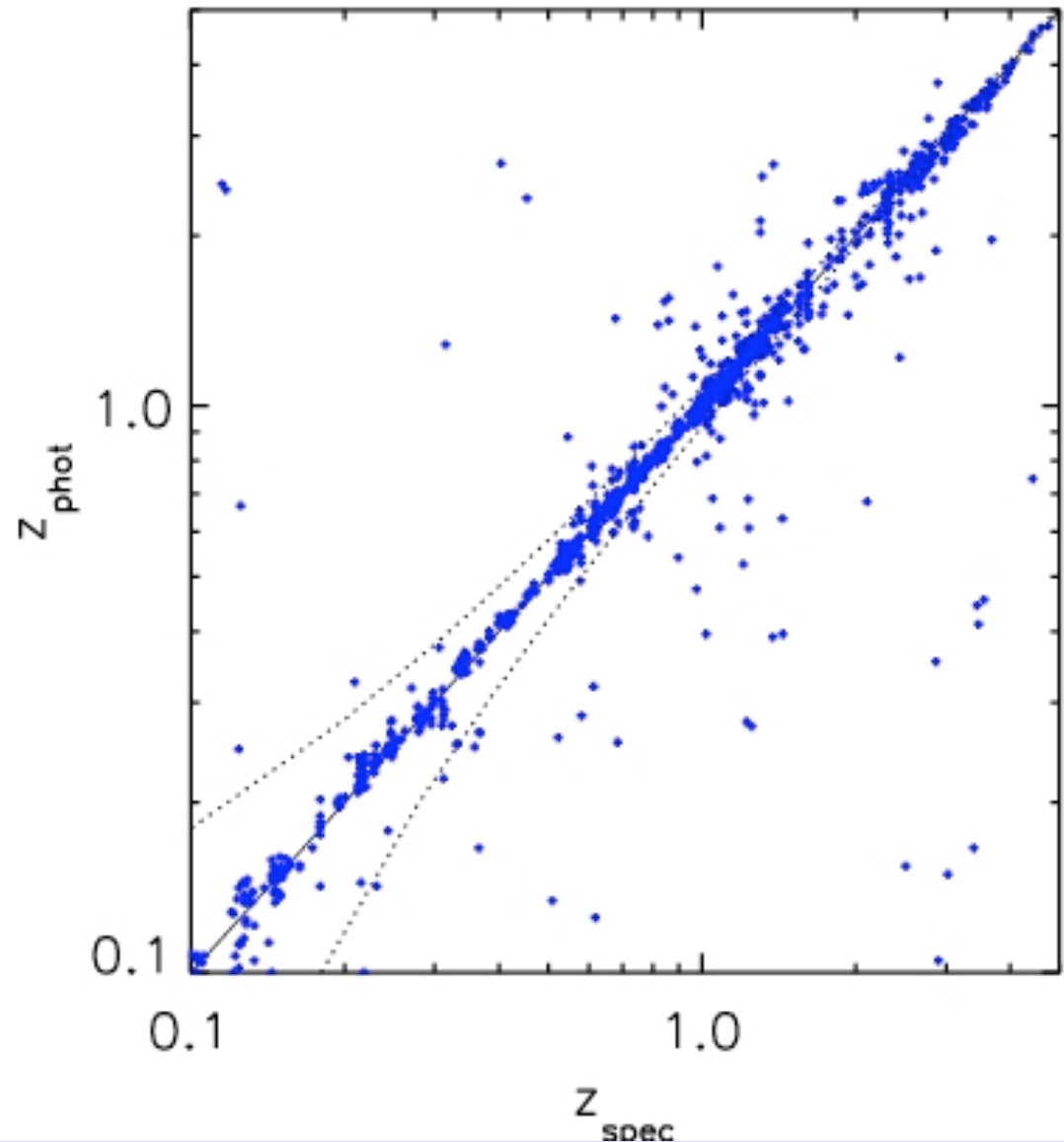
median = 0.009

9.5% outliers

0.1 < z < 1.2

median = 0.007

7.5% outliers



EAZY¹ Photometric z

$$\frac{\Delta z}{1 + z_{spec}}$$

$0.1 < z < 5$

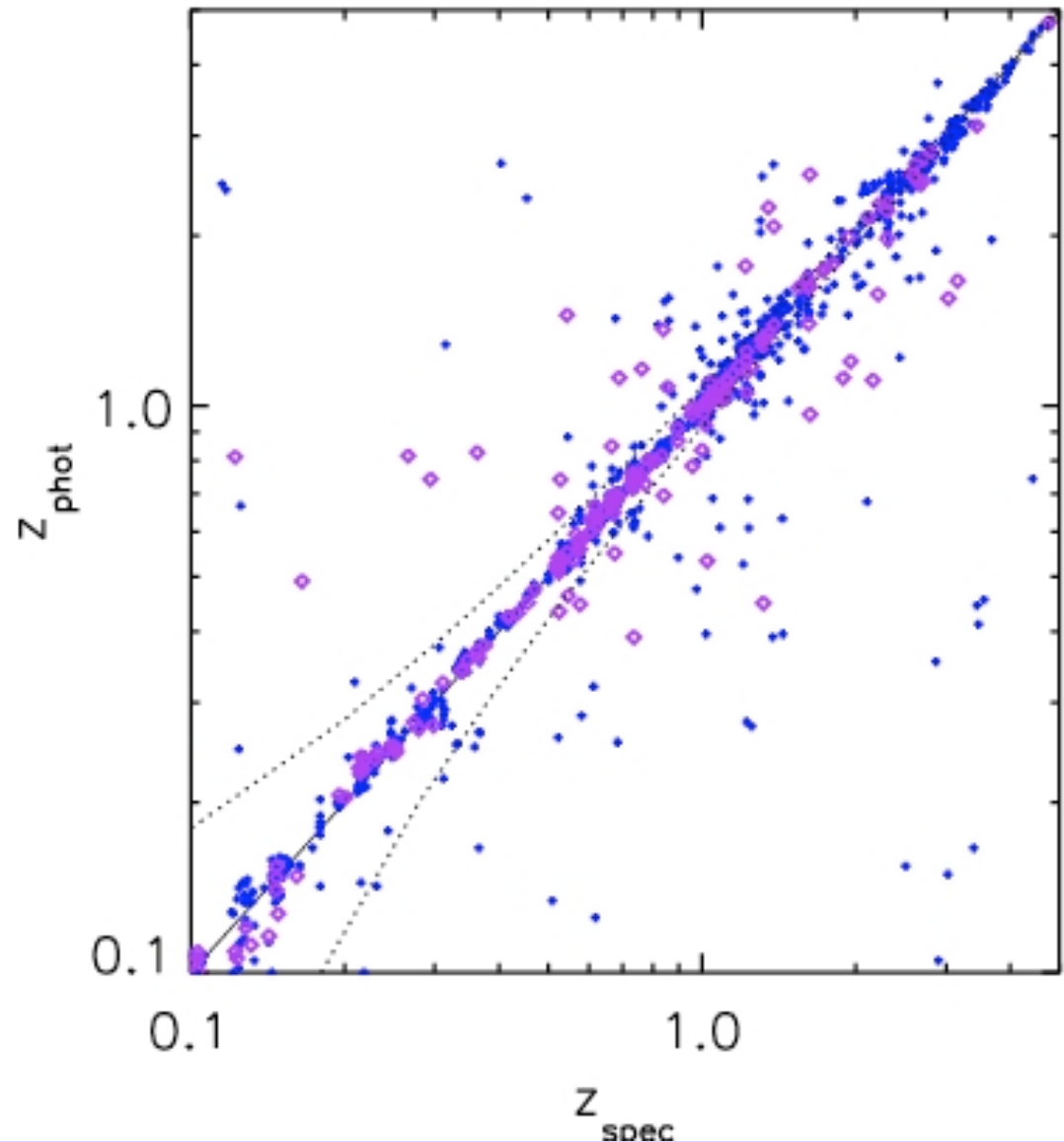
median = 0.008

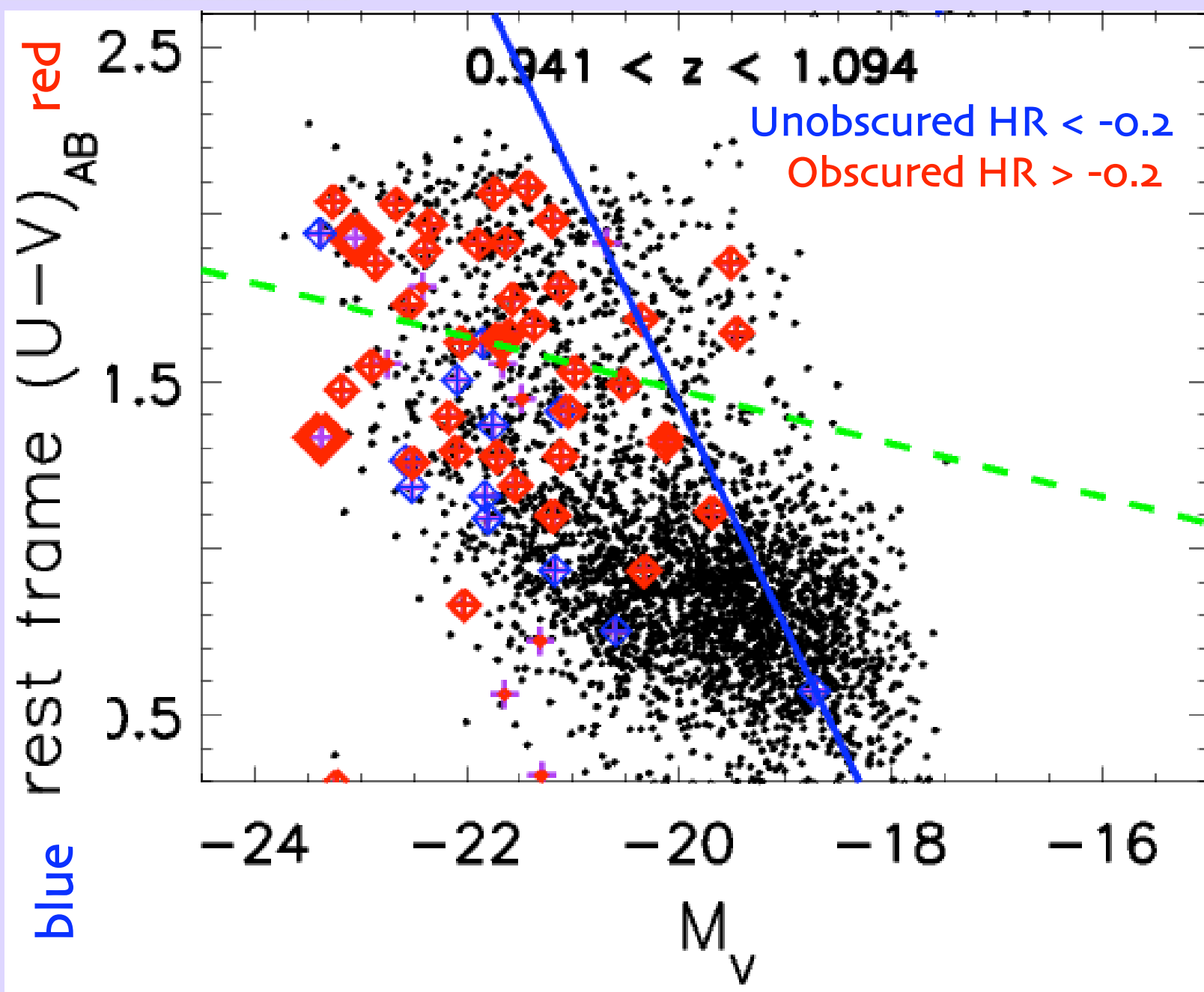
17% outliers

$0.1 < z < 1.2$

median = 0.007

14% outliers



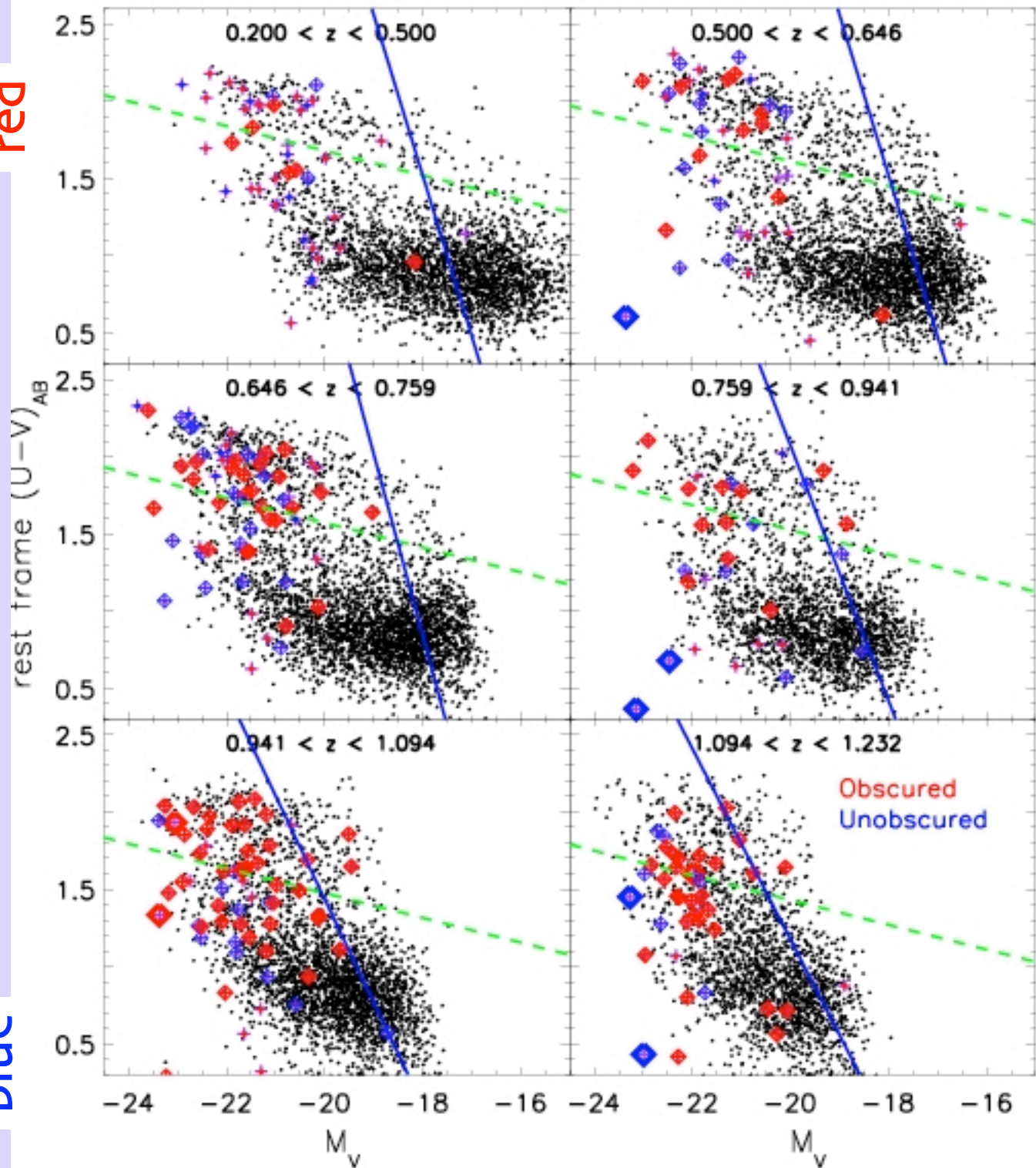


We see the
bimodal galaxy
population to $z \sim 1$.

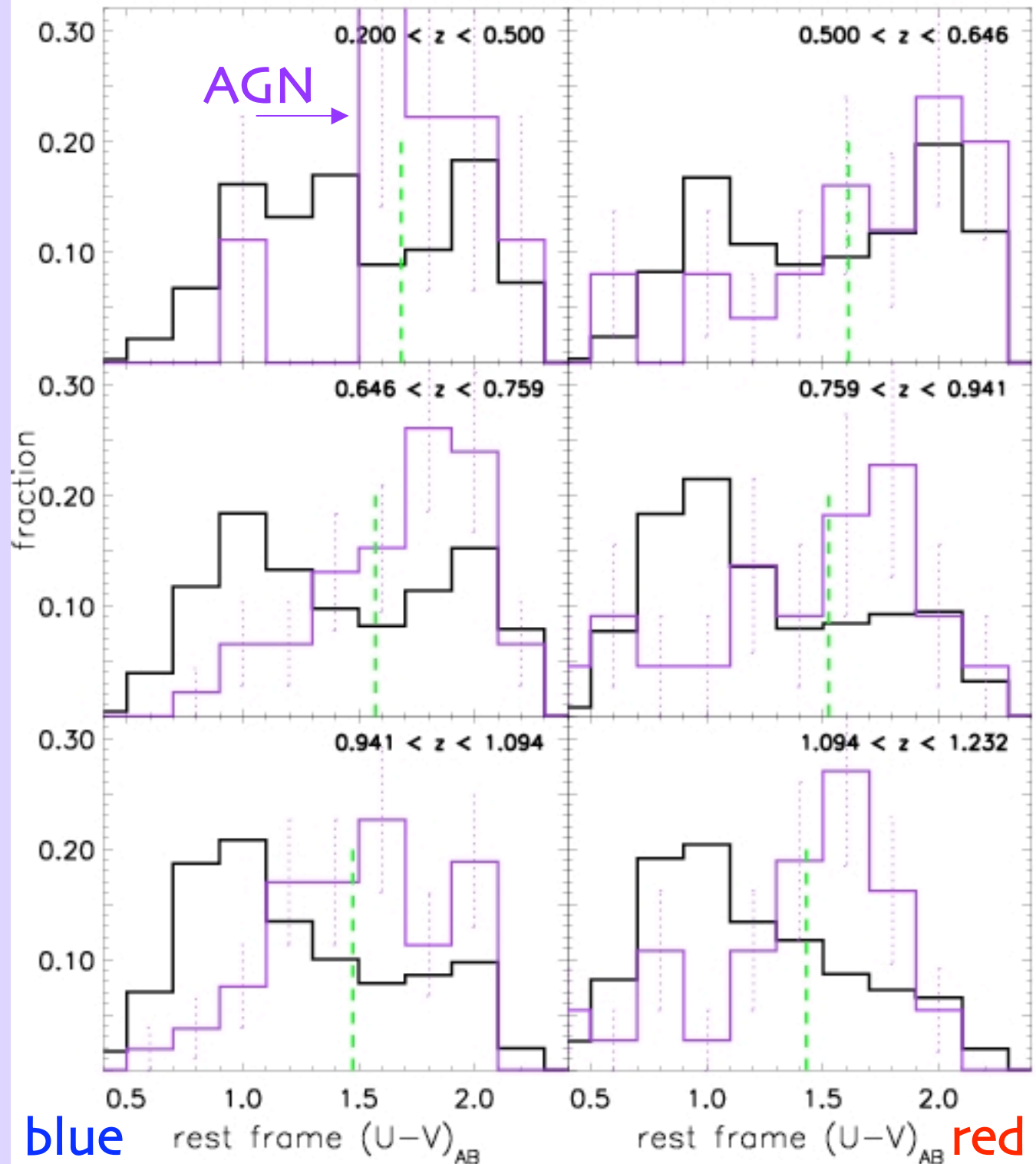
The AGN
population is not
bimodal.

red

blue

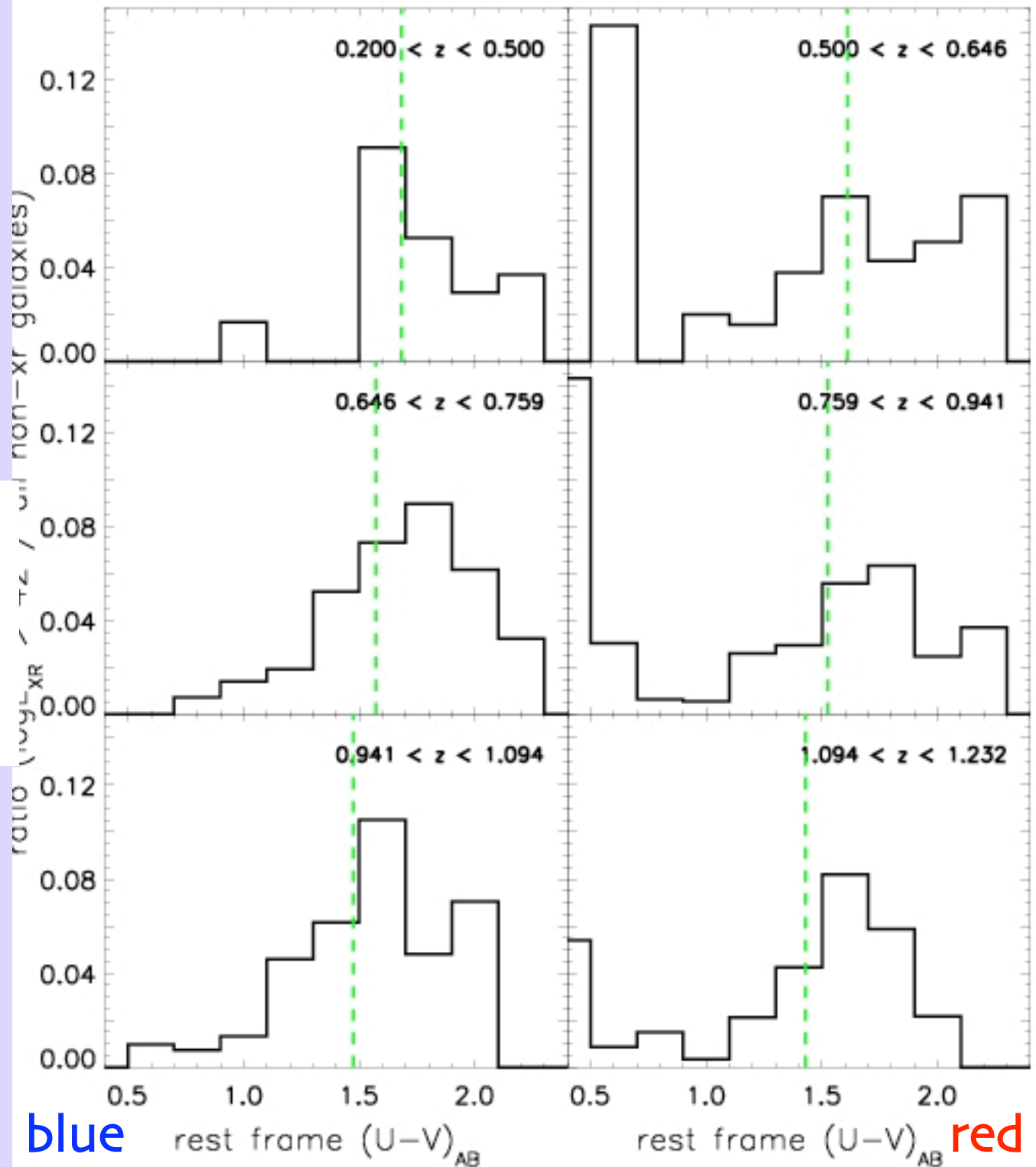


The peak of the
AGN distribution
is not centered on
the ‘green valley’,
but extends
towards the red.



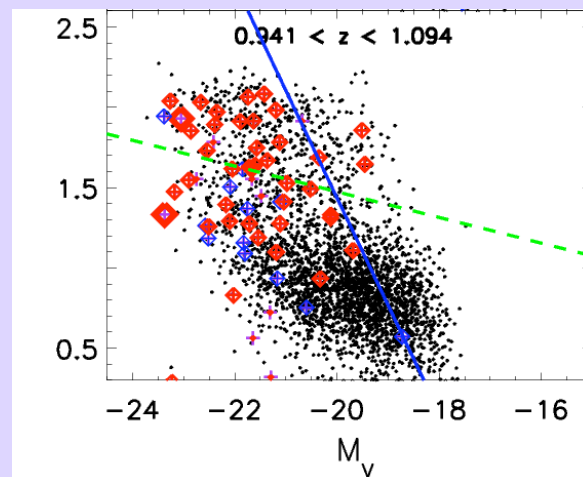
the peak of the
AGN fraction
distribution is
towards the
red.

$\frac{\# \text{ AGN}}{\# \text{ Galaxies}}$



Key Question

- **Age of AGN host galaxies**
 - Can we robustly estimate the stellar ages of the AGN host galaxies?
- **Composition of the red sequence**
 - Is the red sequence a uniform population?



Next Steps

- **Hubble Zoo: Morphologies from GOODS and GEMS**
 - Do the X-ray sources share the morphologies of galaxies at the same colors?
- **Point source subtraction** (Simmons et al. 2009)
 - How much does the point source influence the “color” determined from ground based photometry?
- **Environments**
 - Are the AGN more or less clustered than galaxies of similar morphology & color?
 - Do the AGN lie in different regions of the color-magnitude diagram as a function of environment?

