

**AGN WG**  
**MPE Garching 23-26 April 2018**

## 4CRS Quasar Conclusions

- Increase 4MOST eROSITA AGN survey from  $\sim 50 \text{deg}^{-2}$  to  $\sim 130 \text{deg}^{-2}$  to compete on BAO/RSD
- Use UVX+NEOWISE+eROSITA to optimise selection efficiency  $\rightarrow$  ATLAS+ACE+DEUCE u-band surveys
- Probe below  $1e-14$  cgs to redshift  $3\sigma$  X-ray quasars
- UV/X-ray Hubble Diagram – Risaliti+Lusso
- Cross-correlate with DES+LSST imaging:
  - QSO lensing magnification bias
  - QSO galaxy clustering environment
- QSO LyA forest cosmology at  $z > 2.2$
- eFEDS QSO - 2dF follow-up in Semester 19A



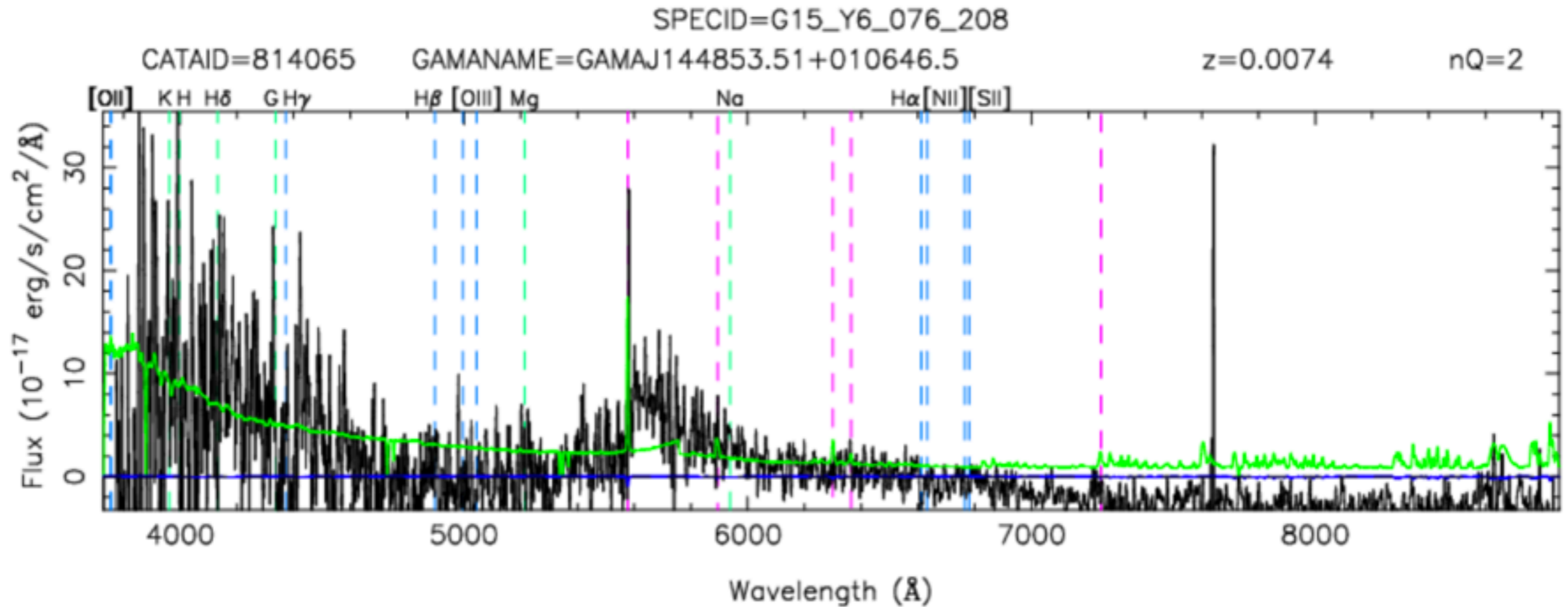
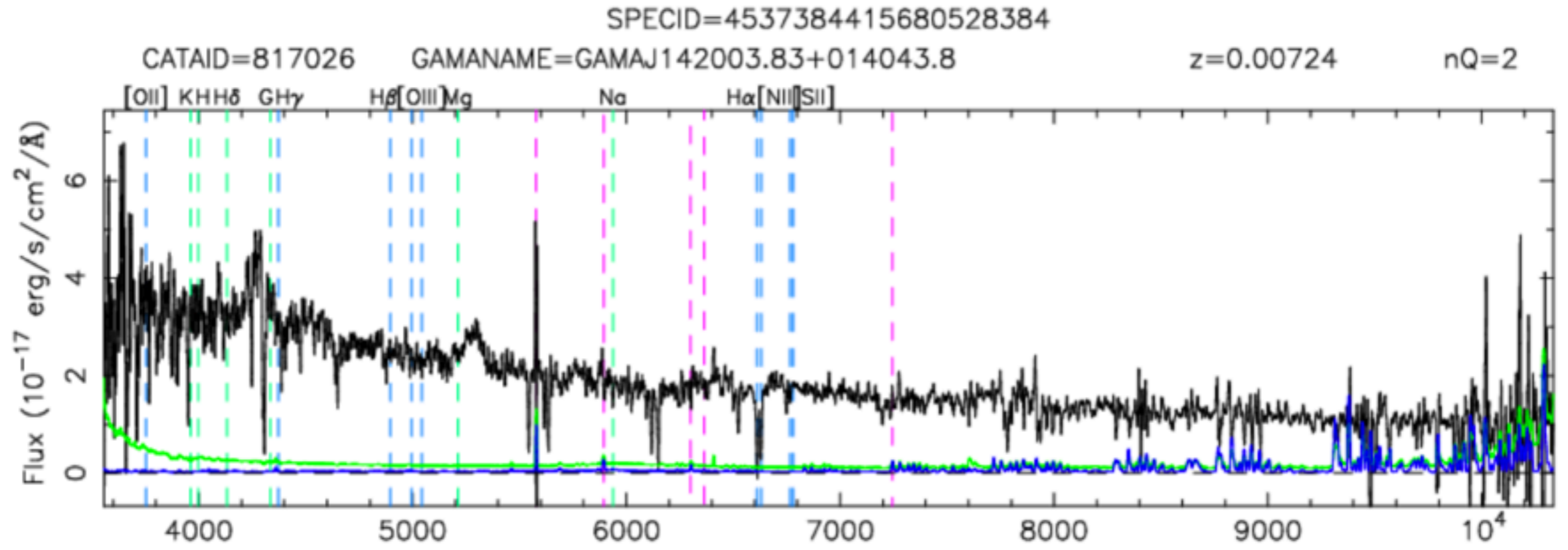
**eROSITA:** M. Salvato, A. Merloni, A. Georgakakis, A. Del Moro, J. Buchner, T. Dwelly

**CAASTRO:** V. Moss (PI), E. Sadler, J. Allison, E. Mahony

- What do we learn from a **combined FLASH/eROSITA survey**?
- Connection between radio AGN with/without X-rays: **emission mechanism**
- What **kinds** of galaxies have: 1) radio AGN, 2) X-ray AGN, 3) HI absorption? Trace **multi-wavelength** properties
- Comparable **angular resolution** studies (20" FLASH, 20-30" eROSITA)
- **$N_H$  vs.  $N_{HI}$**  for a large sample (100s of galaxies most likely)
- Studies of **variability** in radio/X-rays

**Pilot fields: XMM-XXLS, SPT, eFEDS**

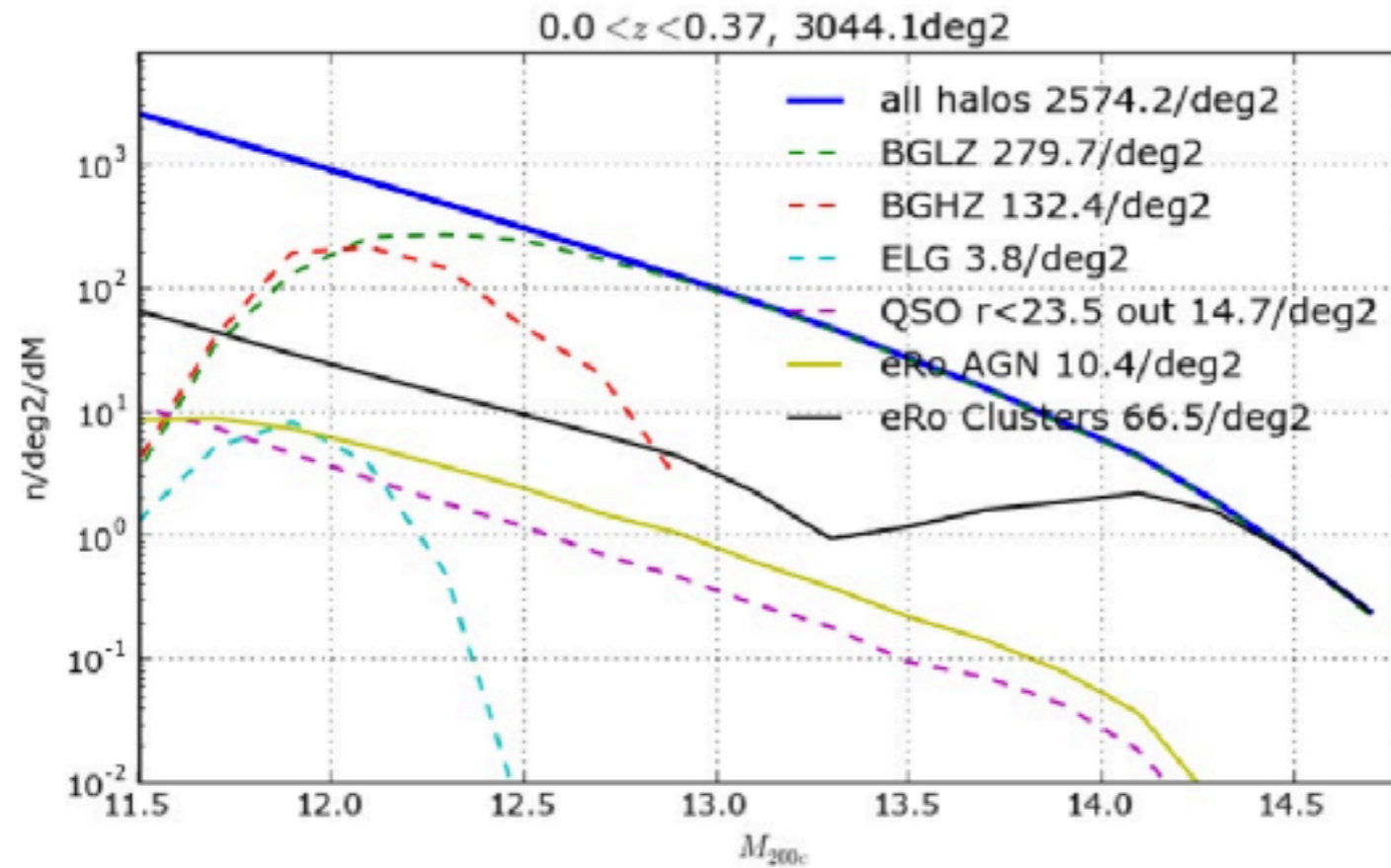
# D. Asmus





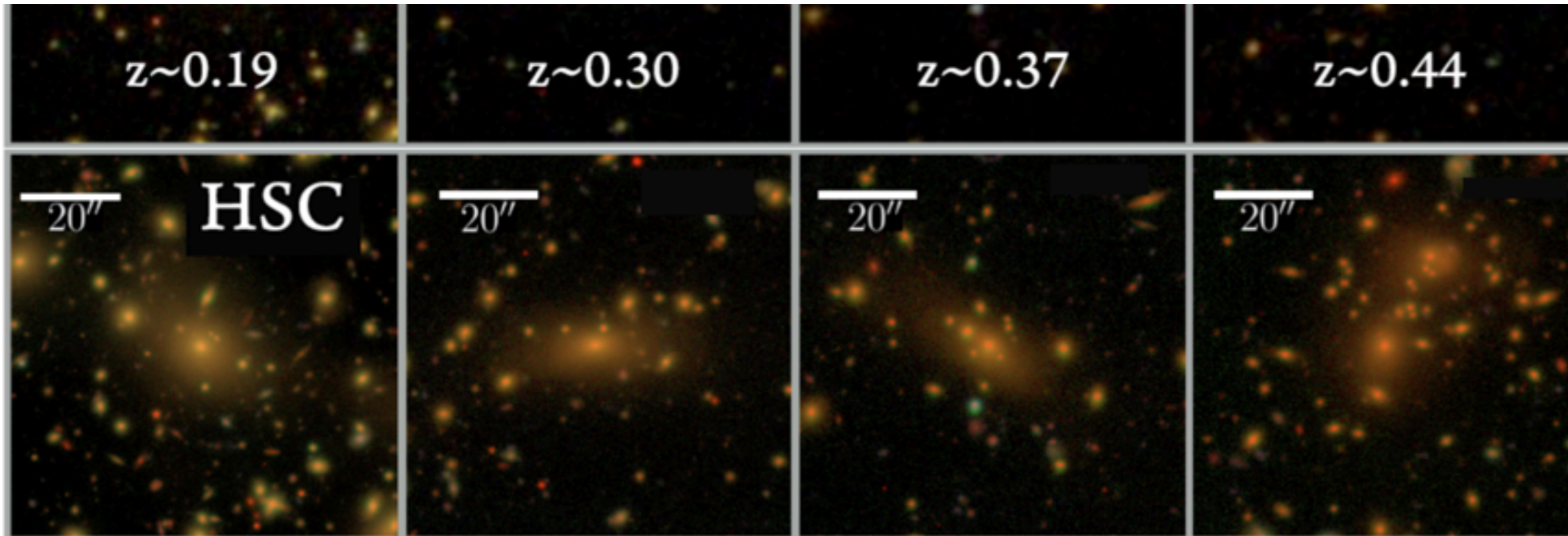
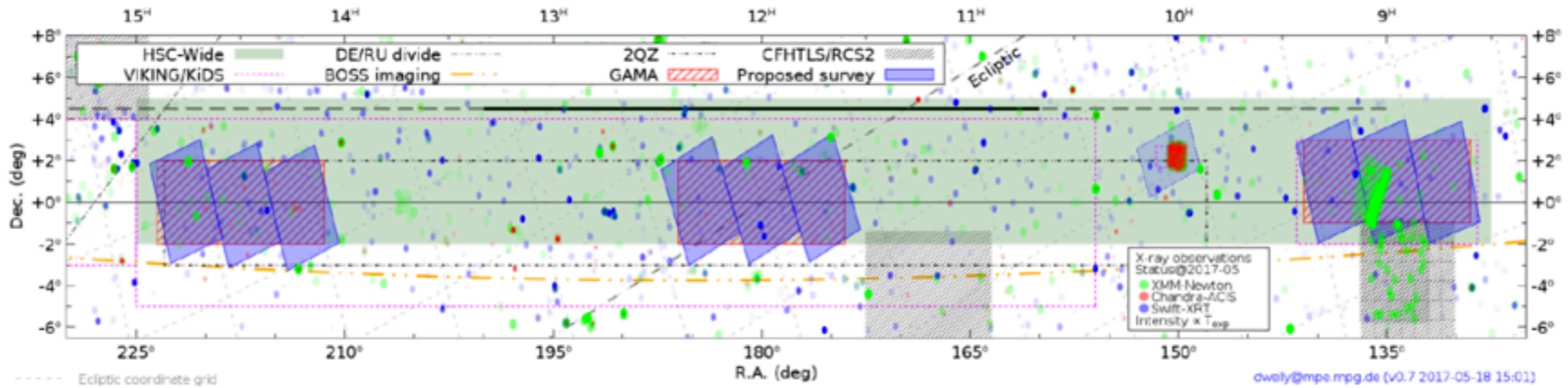
## Simulating 4MOST X-ray + cosmology surveys

### Number density of tracers

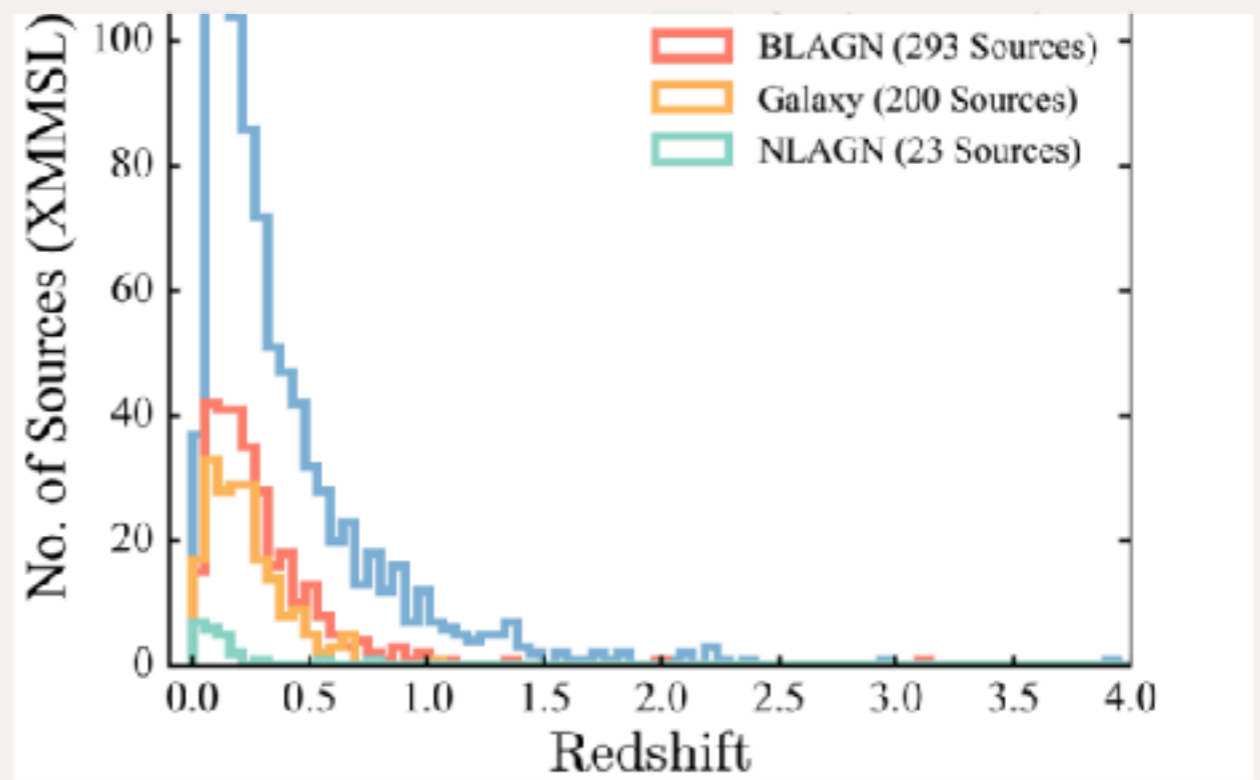
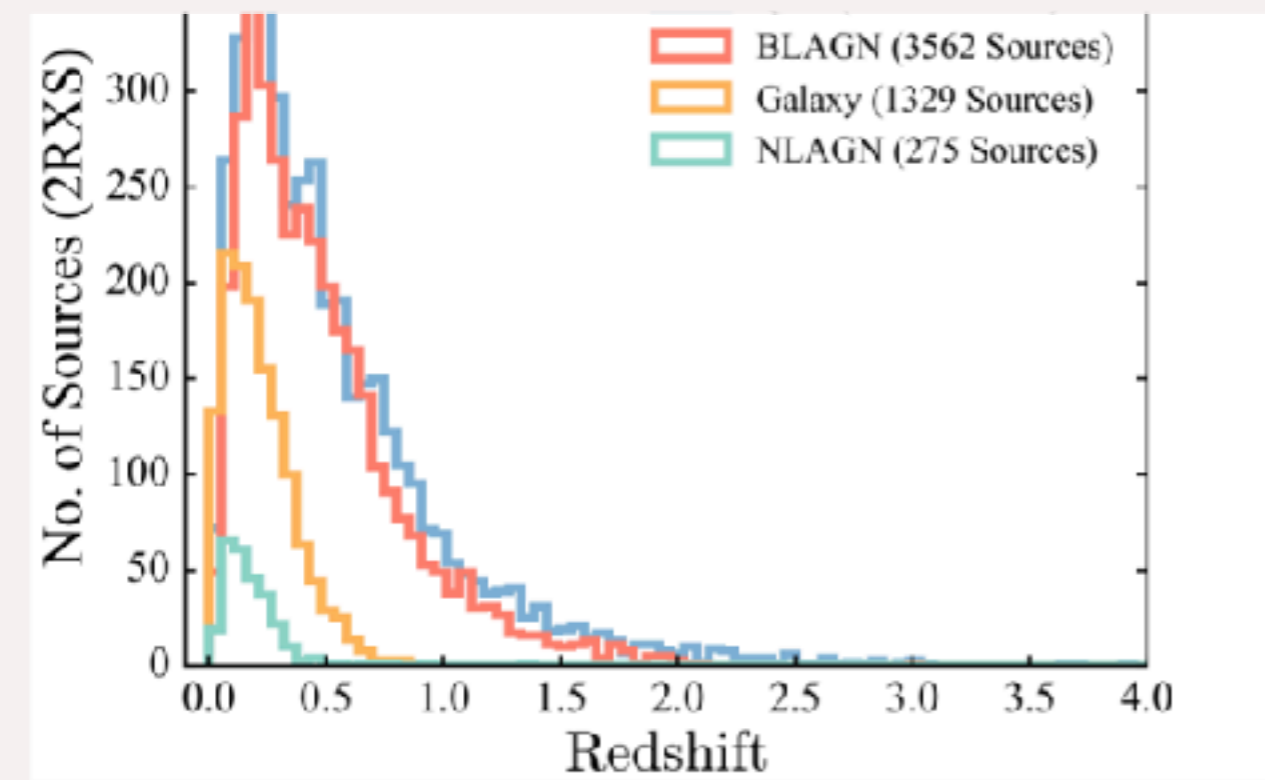
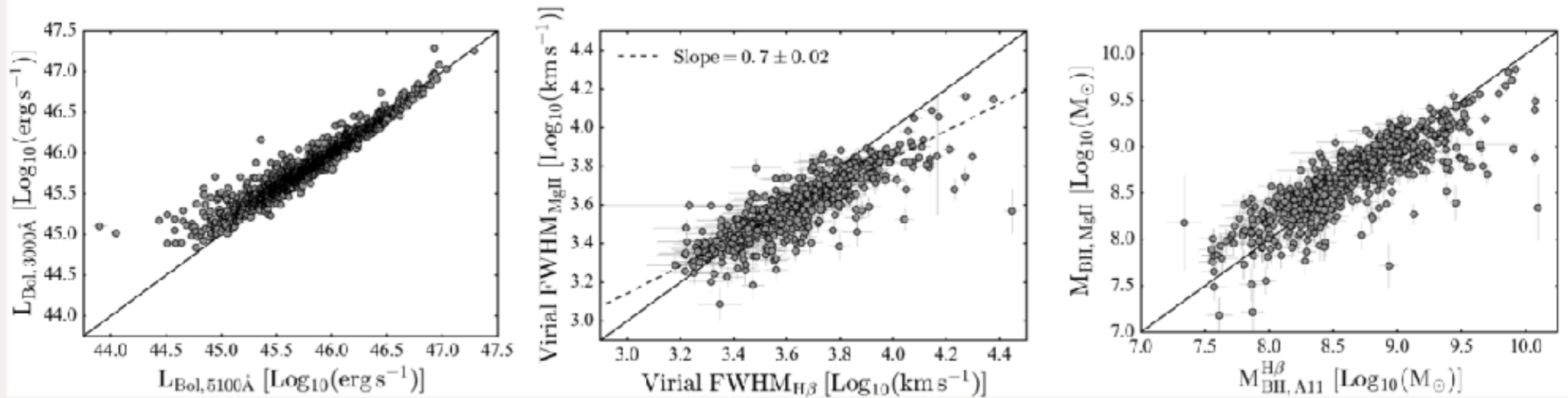




# eFEDS: the eROSITA Final Equatorial-Depth Survey



# D. Coffey





# Luminous obscured AGN science project for eROSITA

- **first all sky hard X-ray survey**

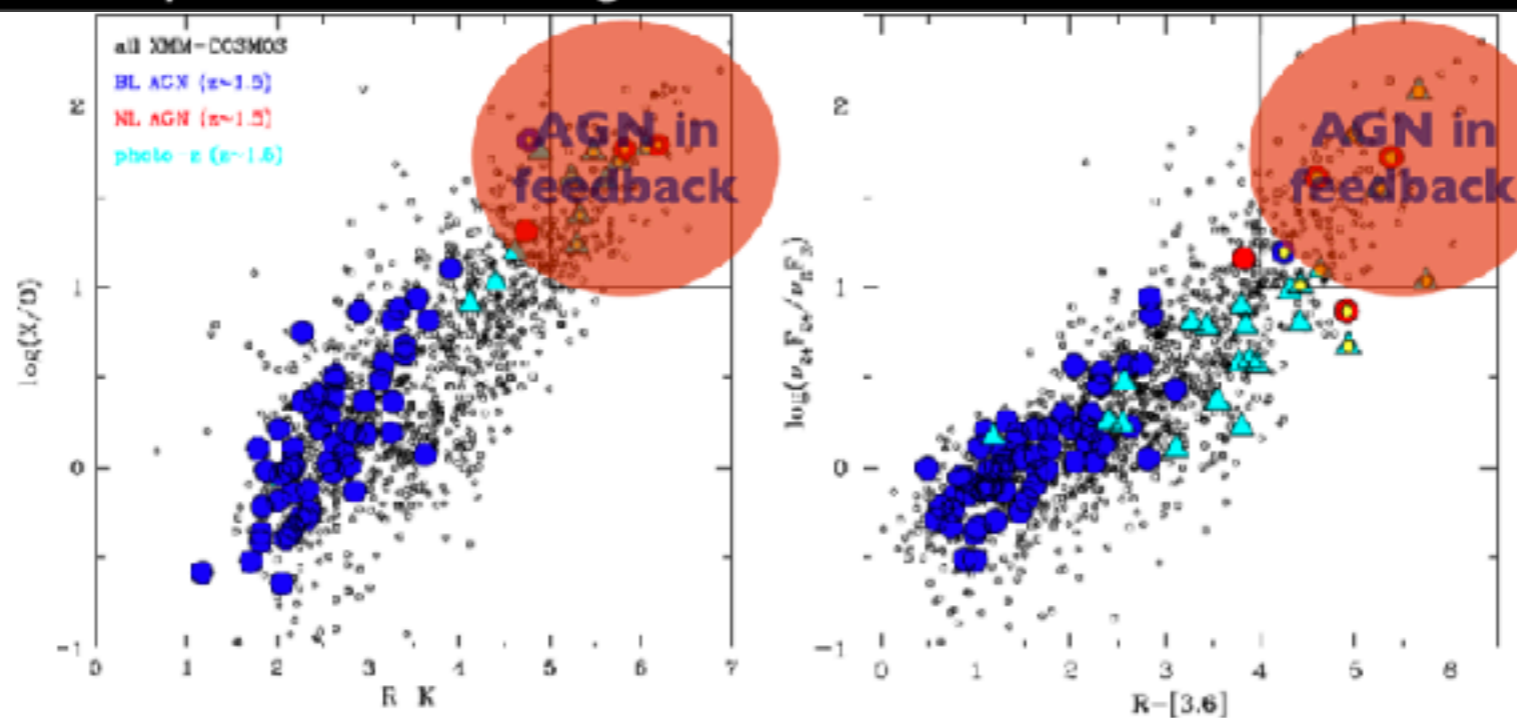
(value of an all sky X-ray survey needed to compare with other selections; ~1000-10000 candidates)

- **selection is "cheap"**

(based on three bands / only photometry)

- **best areas already isolated (in DE side)**

eFEDS (120 deg<sup>2</sup>) / HSC (500-600 deg<sup>2</sup>) + VIKING / J-PAS  
UKIDSS+BOSS / VIKING+KIDS / DES+VIKING+VST-ATLAS,  
immediate science also from PV & eRASS1  
(numbers already a factor ~10 larger than current statistics!)



Selection based on X-ray-to-optical (X/O) or MIR to optical (MIR/O) and NIR to optical (R-K, R-3.6) colors



## AGN WG meeting Wed 25/4 9:00-11:00

### Agenda 9:00-11:00

- Tom Shanks (Durham): [Status of the 4MOST cosmology quasar redshift survey](#) (12+3 min)
- Vanessa Moss (ASTRON): ["Connecting HI and soft X-ray absorption in distant AGN with next-generation telescopes"](#) (12+3 min)
- Daniel Asmus (SOTON): ["Local Obscured AGN"](#) (12+3 min)
- Johan Comparat (MPE): ["eROSITA mocks"](#) (12+3 min)
- Tohru Nagao (Ehime University) [HSC-eROSITA](#) (12+3 min)

### Agenda 11:30-13:00

- Damien Coffey (MPE) [SPIDERS DR14 Quasars: A Catalogue of Multiwavelength Properties and Black Hole Mass Estimates](#) (12+3 min)
- Marcella Brusa (Bologna): ["Catching AGN in the feedback phase: the crucial role of large area X-ray surveys \(and prospects for eROSITA\)"](#) (12+3 min)
- DISCUSSION:
  - PV-phase planning, preparation for eFEDS
  - Simulations to test optical identifications
  - Simulations to test X-ray sensitivity
  - Other matters, ECs etc.

**AGN WG meeting exclusively focussed on the end-to-end test,  
planned for early summer.**

**Tasks will be assigned and montly telecon for reporting on progresses.**