Galaxy groups in the COSMOS

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L. Guzzo, G. Hasinger, N. Scoville, A. Leauthaud, J.P. Kneib, H. Boehringer, & COSMOS collaboration
X-ray Scaling relation with lensing mass estimates
420 photo-z structures:

- $z=0.1$
- $z=0.3$
- $z=0.5$
- $z=0.7$
- $z=1$
X-ray cluster catalog

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X-ray Scaling relation with lensing
mass estimates
Redshift distribution

![Redshift distribution diagrams]
Log(N)-log(S)
Luminosity Function

BCS (Ebeling et al. 1998)

\[ \frac{d^2N}{dVdl} \]

\[ L_{0.1-2.4\,\text{keV}} \] [ergs/s]

z < 0.6

z > 0.6

0 < z < 1.3

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X-ray Scaling relation with lensing mass estimates
COSMOS: X-ray selected clusters with weak lensing detection
Stacked lensing signal

Reduced shear profile, KT=[0, 1]

Reduced shear profile, KT=[2, 4]

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X-ray Scaling relation mass estimates
M(lensing)-T relation

11 most luminous clusters at $z \sim 0.2$

Bardeau et al.

• Merger clusters scatter more from the M-T relation
  • Luminosity selection is contaminated by the low-mass clusters

AF et al. 2001

Vikhlinin et al. 2005

Stacked analysis

$M_{\text{500}}$ [$M_\odot$]

$M_{\text{500}}$ [$M_\odot$]

$kT$, keV

$10^{13}$

$10^{14}$

$10^{15}$
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Conclusions

- COSMOS survey explores the new regime of cluster fluxes
- logN-logS is found to be similar yet somewhat higher than the predictions from the previous surveys
- No evolution of the X-ray luminosity function is detected at probed luminosities
- Lensing mass estimates extend to down to group regime
COSMOS -- team & collaborators

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