

Thermodynamic perturbations in the X-ray halo of 33 clusters of galaxies observed with *Chandra* ACIS (Corrigendum)

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Owing to an issue in the fitting program XSPEC version 12.8.2¹, the correlations of metallicity with redshift and temperature in Hofmann et al. (2016) need to be revised. The bug caused normalisation (η) and metallicity (Z) in the *apec* model to be a factor of $\sim (1+z)$ too low (z , redshift of the source).

The rest of our results are not affected by the bug since they are based on ratios of fit properties. In the published thermodynamic maps², normalisation and metallicity need to be corrected by multiplying with a factor of about $(1+z)$, where z is the redshift of the respective cluster. This propagates into approximate corrections of density $\times (1+z)^{1/2}$, pressure $\times (1+z)^{1/2}$, and entropy $\times (1+z)^{-1/3}$.

We did a complete rerun of our analysis with XSPEC version 12.9.0o (bug fixed) and revised the correlations (see Fig. 1). The updated best-fit linear correlations of metallicity with temperature (T in keV) and redshift are (including 1σ uncertainties) written as

$$Z/Z_{\odot} = (-0.75 \pm 1.10) T/100 \text{ keV} + (0.35 \pm 0.08) \quad (1)$$

$$Z/Z_{\odot} = (-0.43 \pm 0.25) z + (0.38 \pm 0.05). \quad (2)$$

The slopes change as expected within the uncertainties. There is no significant correlation of metallicity and temperature between clusters anymore. The metallicity-redshift correlation has a reduced significance of $\sim 1.7\sigma$. The average metallicity of the sample stays the same within the uncertainties at $Z \approx (0.3 \pm 0.1) Z_{\odot}$.

References

Hofmann, F., Sanders, J. S., Nandra, K., Clerc, N., & Gaspari, M. 2016, *A&A*, 585, A130

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¹ <https://heasarc.gsfc.nasa.gov/docs/xanadu/xspec/issues/archive/issues.12.9.0u.html>

² <http://cdsarc.u-strasbg.fr/viz-bin/qcat?J/A+A/585/A130>

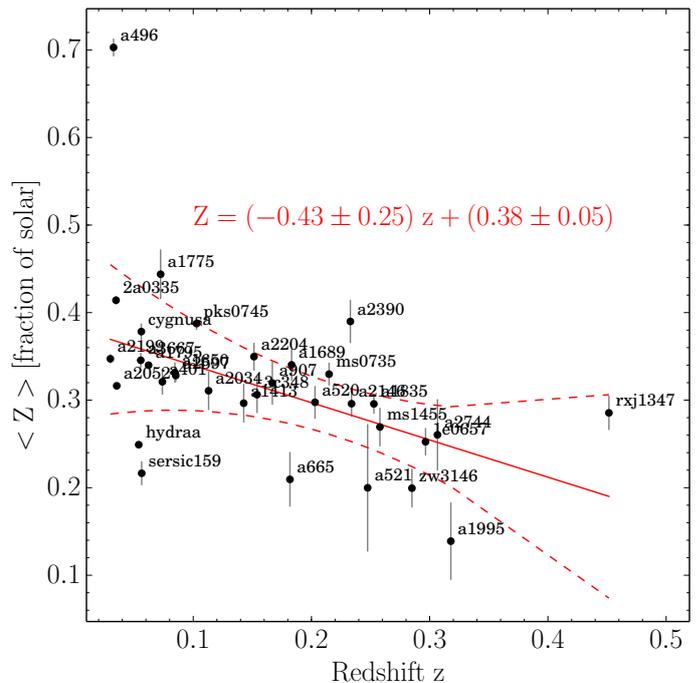


Fig. 1. Comparison of the cluster redshift z and the area- and error-weighted average 2D map metallicity measured in the intra-cluster medium (full radial range). The red line and equation show the best-fit linear correlation. Dashed lines indicate the 1σ scatter around the best fit. Error bars are the statistical uncertainty of the weighted average.