## CURRENT WORK

Cosmological constraints on $\Omega_M$ and $\sigma_8$ for a flat universe with scale-invariant primordial power spectrum and "shape parameter" $\Gamma = 0.18$, and a 500 sq. deg. XCS survey have been derived (using our simulated selection function). X-ray temperature has been used as a mass proxy (with a minimum photon count of 500), but the constraints are otherwise generic to the XMM archive.

Figure 1 shows constraints for constant L-T and self-similar L-T, where no scatter in the L-T or M-T relations has been assumed. The M-T relation is assumed self-similar and normalised to HIFLUGS. The L-T and M-T relations are assumed known in the fitting. Temperature and redshift measurements are assumed perfect.

Figure 2 shows the same constraints as for Figure 1, but here realistic and worst-case temperature and redshift errors are applied to the mock data, and then accounted for in the fitting. The temperature error distribution has been obtained through simulations based on the XMM archive properties. Redshift error distributions are assigned based on common practice in the literature. The effect of measurement errors on the size of constraints is relatively modest. We have also found (not shown here) that even ignoring measurement errors in the fitting gives only a moderate bias.

Figures 3 and 4 show constraints for constant and self-similar L-T, respectively, used for the mock data, and where the L-T parameters are jointly fitted with the cosmological parameters.

Figure 5 shows examples of the bias that occurs when making incorrect assumptions about the mass-observable relations in the fitting.

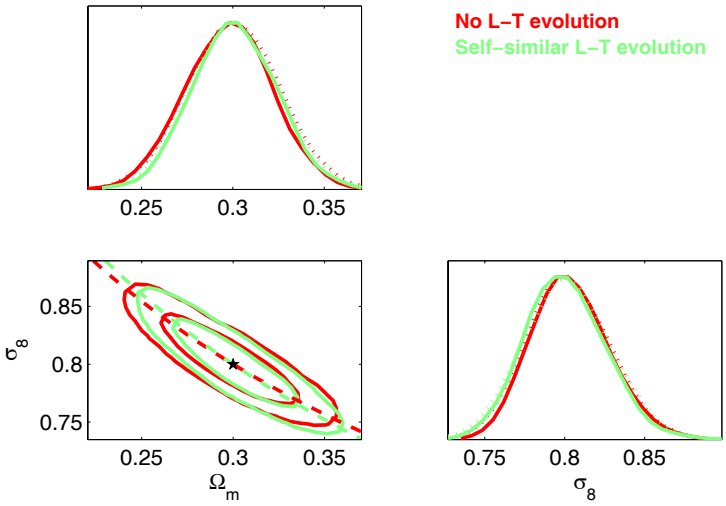


**Figure 1** Constraints for constant (red) and self-similar (green) L-T evolution, with no measurement errors. Star denotes fiducial model, and lines indicate degeneracies.

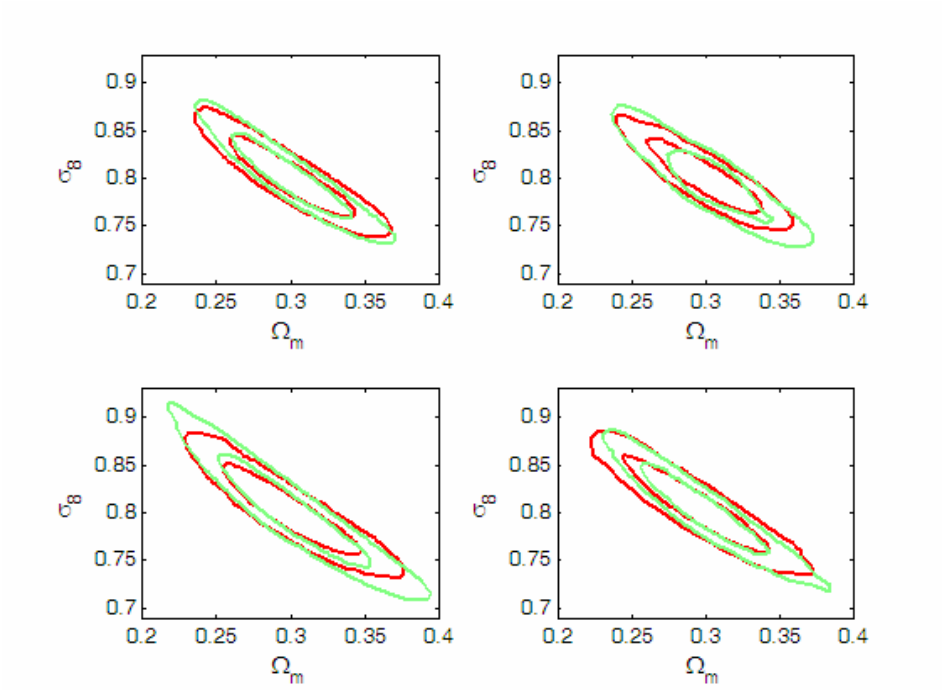


**Figure 2** Constraints for constant (red) and self-similar (green) L-T evolution, for various temperature and redshift errors. Clockwise from top-left: realistic T errors, realistic z errors, worst-case z errors, worst-case T errors.

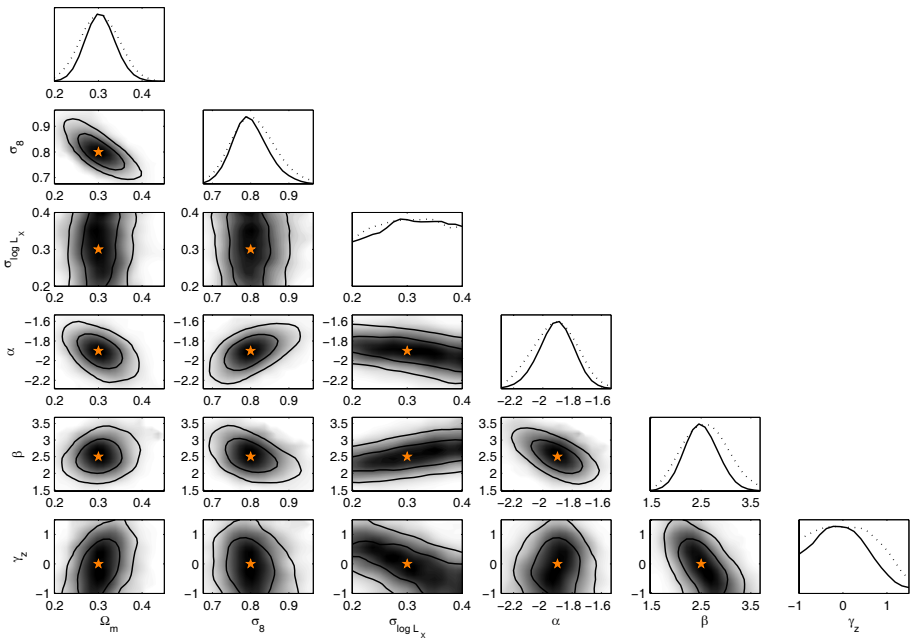


**Figure 3** Self-calibration constraints of cosmology and L-T parameters, for constant L-T as fiducial model (**not final**). Stars denote fiducial model.

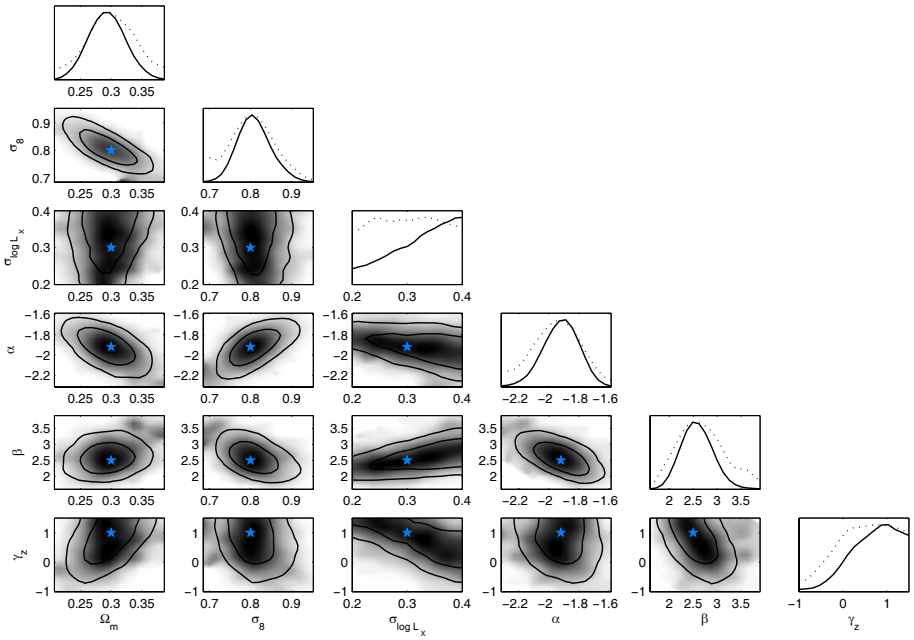


**Figure 4** Self-calibration constraints of cosmology and L-T parameters, for self-similar L-T as fiducial model (**not final**). Stars denote fiducial model.

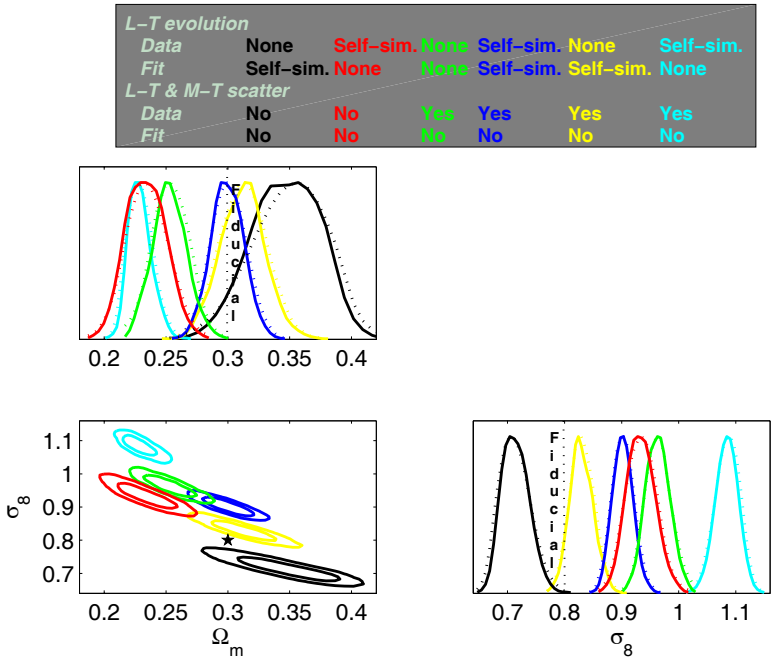


**Figure 5** Effect of incorrect mass-observable assumptions on constraints. Star denotes fiducial model.

## FUTURE WORK

We plan to carry out additional simulations in the same fashion for generic flux-limited surveys, to determine how cosmological constraints vary with flux limit and survey area, including something representative of eRosita. These constraints will primarily be for serendipitous surveys, and as such will provide overestimates of the size of constraints that can be expected for contiguous surveys where clustering is taken into account. We may also eventually extend the analysis to include clustering.