

Some Investigations in standardisation with t_2

December 9, 2014

In this report, I summarise a short test I carried out to see the distributions in σ_{res} for two case s: with only x_1 and with only t_2 . For this particular investigation, leaving out colour would mean a higher scatter value in both cases than is expected for cosmology.

1 Method

Data: 22 objects with NIR light curves (file sent)

I convert the apparent magnitudes in absolute magnitudes using

$$M_B = m_B - \mu \tag{1}$$

where μ is derived using Λ CDM with $\Omega_\Lambda=0.73$ and a flat universe. H_0 is 70.

I look at the best fit line for M_B - x_1 and M_B - t_2 using a Gibbs sampler for fitting a line to data with errors on both axes.

From the output samples, I look at the residual scatter in M_B in both cases. The histograms are plotted in figure 1

2 Result

The median for t_2 is 0.24 whereas for x_1 is 0.27 mag. Without correction the scatter is 0.31. As a diagnostic, the pearson coefficient (r) for t_2 is 0.64, whereas for x_1 it is 0.51.

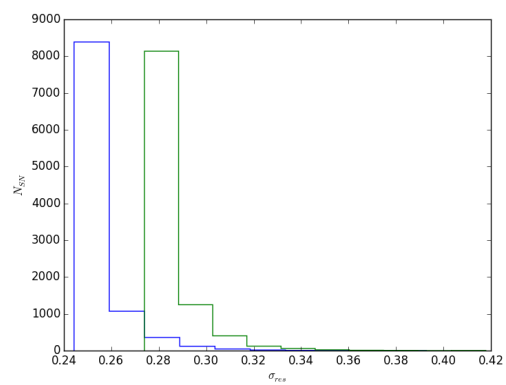


Figure 1: Histogram of the samples for σ_{res} using t_2 (blue) and x_1 (green)