H_0 from NIR observations of SNIa

August 13, 2015

The following is a brief summary of the steps in the analysis to estimate H_0

- Using the peak magnitude and H_0 from Folatelli+2010, I calculate the zero point for the given filter using equation 1 (this value is independent of H_0 since both terms on the RHS depend on H_0)
- The H_0 value is calculated using equation 2
- For M_{max} I use the model values provided (without the faintest model since we know that 91bg-likes are fainter even in the NIR).
- Using the mean and error on the zero point and the mean and standard error on the mean on M_{max} from the models, I create 10000 realisation of H_0 (similar to Cartier+2014)
- The final estimate is the mean and standard deviation of the resulting H_0 values
- For the systematic uncertainty, I propagate a 0.03 mag uncertainty in the zero point measurement.

$$ZP = 25 - log(H_0)/0.2 + M_{peak} \tag{1}$$

$$H_0 = 10^{0.2*(M_{max}-ZP+25)} \tag{2}$$

1 Result

Table 1: H_0 values as calculated from the models

Filt	Mod	H_0	err
Y	DDC	75.16	2.37
J	DDC	77.94	2.52
H	DDC	81.95	1.61
J	PDD	70.15	1.30
H	PDD	76.99	1.29
J	SCH	85.10	2.17
H	SCH	88.28	1.29