Investigating the Gaussianity of Supernova SALT2 Summary Statistics

Samuel R. Hinton,[1]⋆ Alex G. Kim,[3] Tamara M. Davis,[1,2] Edward Macaulay[1,2]

[1]*School of Mathematics and Physics, The University of Queensland, Brisbane, QLD 4072, Australia*
[2]*ARC Centre of Excellence for All-sky Astrophysics (CAASTRO)*
[3]*Physics Division, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA 94720, USA*

ABSTRACT
Write an abstract.

1 INTRODUCTION

Few sentences on cosmology.

Use of supernova in cosmology.

DES supernova (segue to precision)

Precision measurements, systematics more important than ever.

Thus motivation

2 MOTIVATION

SALT2 and other models

why summary stats are used (instead of light curve data)

fitting methodologies

highlight Previous studies using summary statistics and their data sets.

Assumed gaussianity.

3 METHODOLOGY

to investigate, go to lowest level and simulate light curves

to start with, realise only canonical supernova from abs mag with some scatter, using WMAP9 cosmology. Do this for shallow and deep fields, and fit the light curves using different methods.

state skewness introduced as z increases and ston decreases

which creates difference when between mean and max likelihood

section detailing the bias as a function of redshift (and ston if possible).

4 COSMOLOGICAL IMPACT

Fit cosmology against simulated SN

Do for des shallow and deep, using survey area to produce z dist plus extra low-z sample (0.05<z<0.2). simulate from light curves, apply selection effect of ston>5to cull bad fits. have <x> shallow.

toy cosmology model. adopt α and β values for Phillips correction from Betoule2014, assume known gaussian intrinsic scatter, have Ω_m, w and M_B as cosmology parameters - marginalise over M_B.

Show cosmology results.

5 CONCLUSIONS

The last numbered section should briefly summarise what has been done, and describe the final conclusions which the authors draw from their work.

ACKNOWLEDGEMENTS

REFERENCES

This paper has been typeset from a TeX/LaTeX file prepared by the author.