CMAGIC

A different way to fit SN Ia light curves

Work in progress!

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SDSS-SN Collaboration Meeting Oct. 2010

Motivation:

Traditional LC-fitters depend on templates either spectroscopic or photometric

Advantage: Use of all information in LC
But: templates may be biased and therefore the derived parameters

As seen in Lampeitl et al. 2010 there is a difference in reconstructed absolute brightness between SN in passive and star-forming galaxies

Is this an effect related to the physics of the SN or an artefact of the LC fitting?

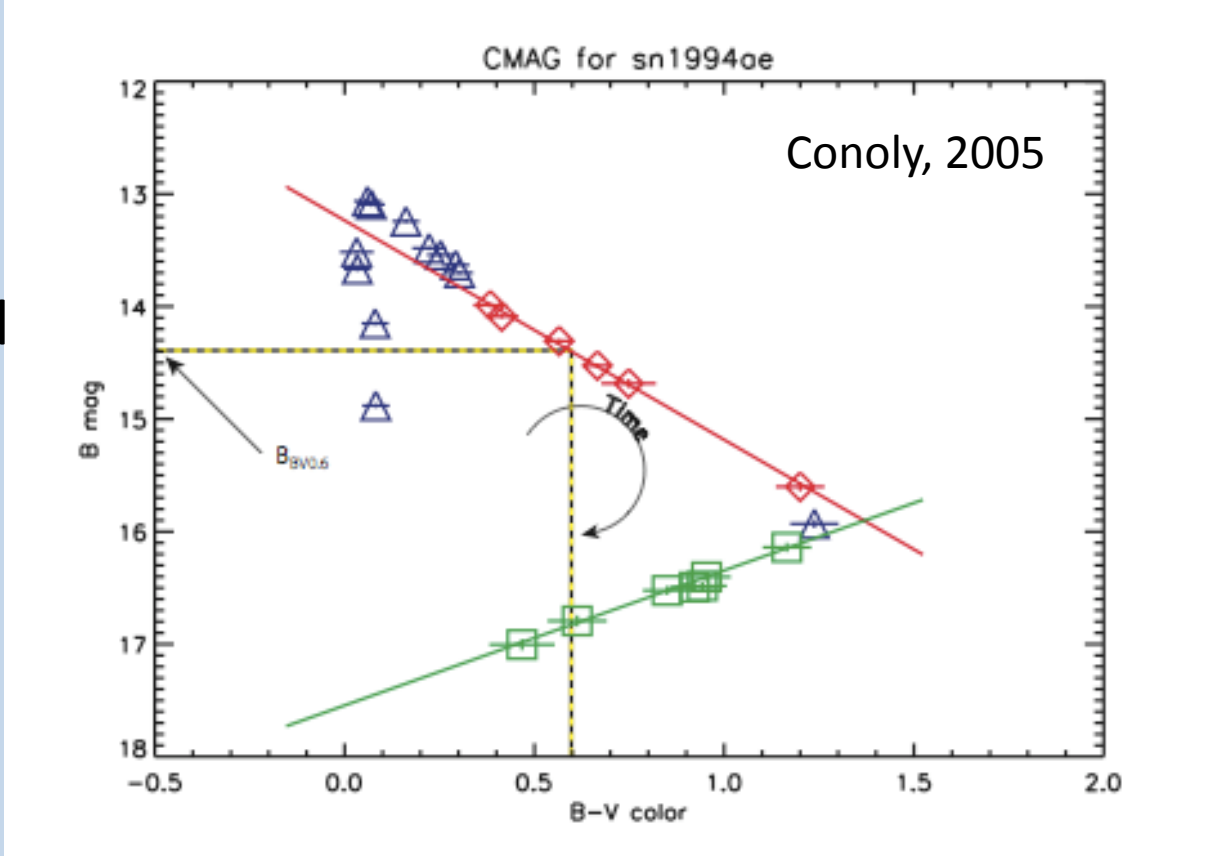
More direct way to measure SN properties?

CMAGIC

L. Wang (2003), A. Conley (PhD thesis 2005)

Empiric relation:

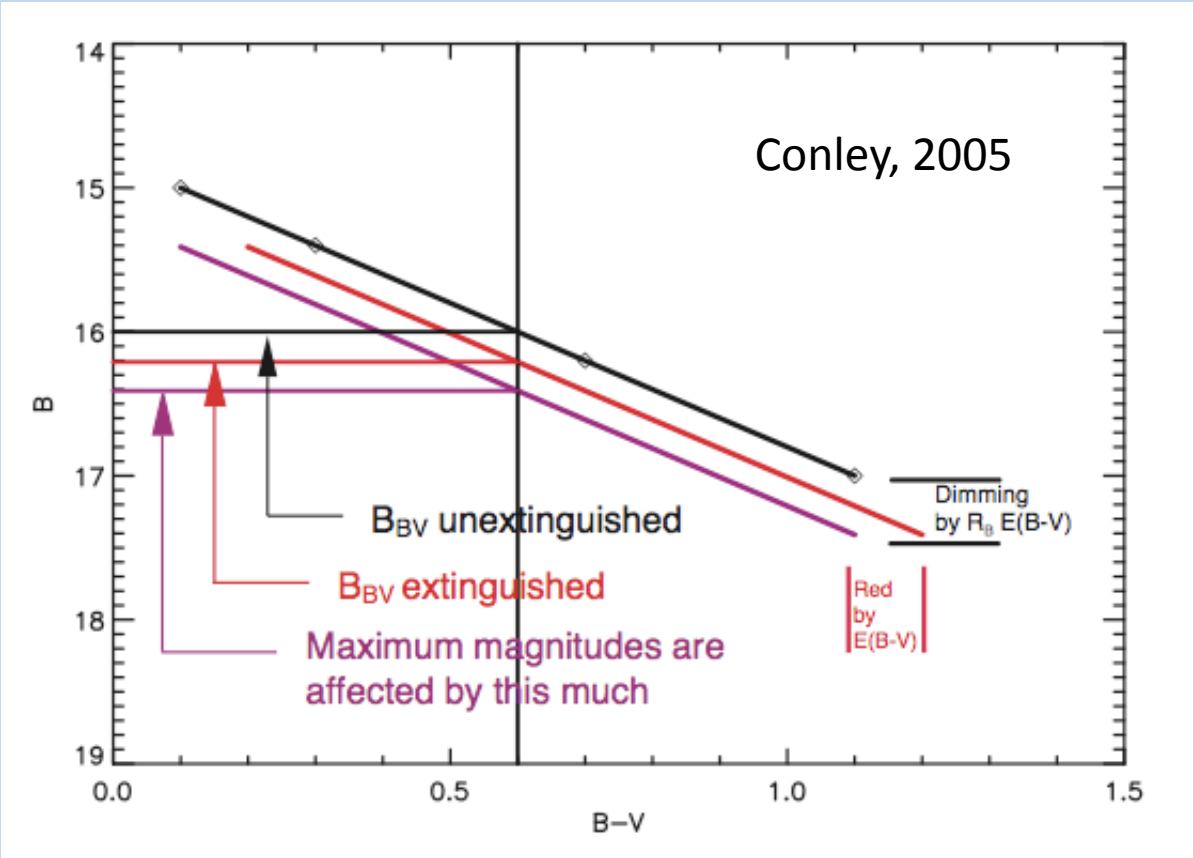
Brightness at a defined color as measure of Absolute brightness



CMAGIC

L. Wang (2003), A. Conley (PhD thesis 2005)

MAB is less affected by dust
Because dimming and Reddening cancel partially!

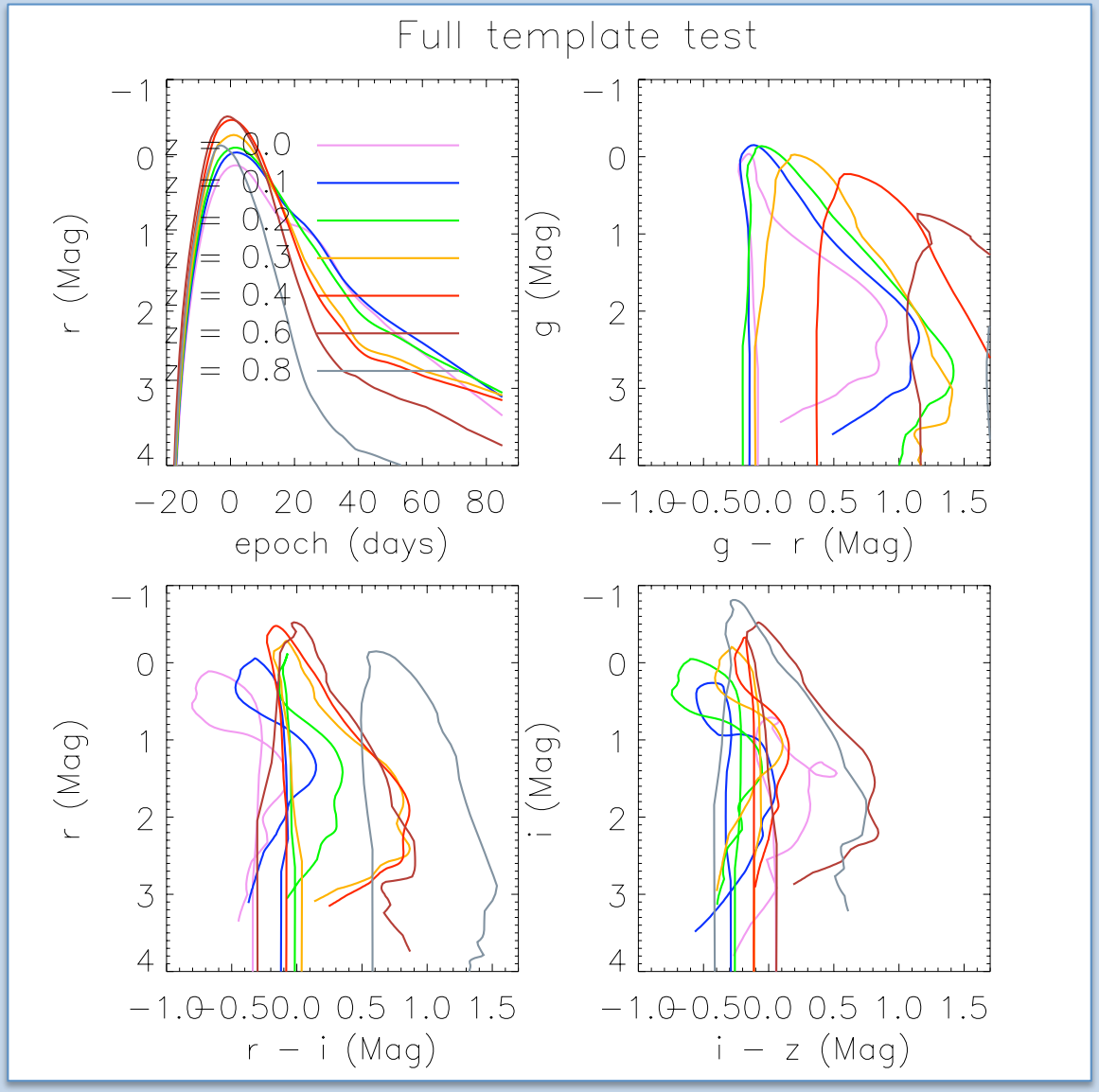


CMAGIC from templates

- Spectral templates from Hsiao

- For a pair of filters there is a redshift range at which a CMAGIC
Relation holds and at which k-corrections are small

SDSS (g,r) z ~ 0.2
(r-i) z ~ 0.4
(i-z) z ~ 0.8



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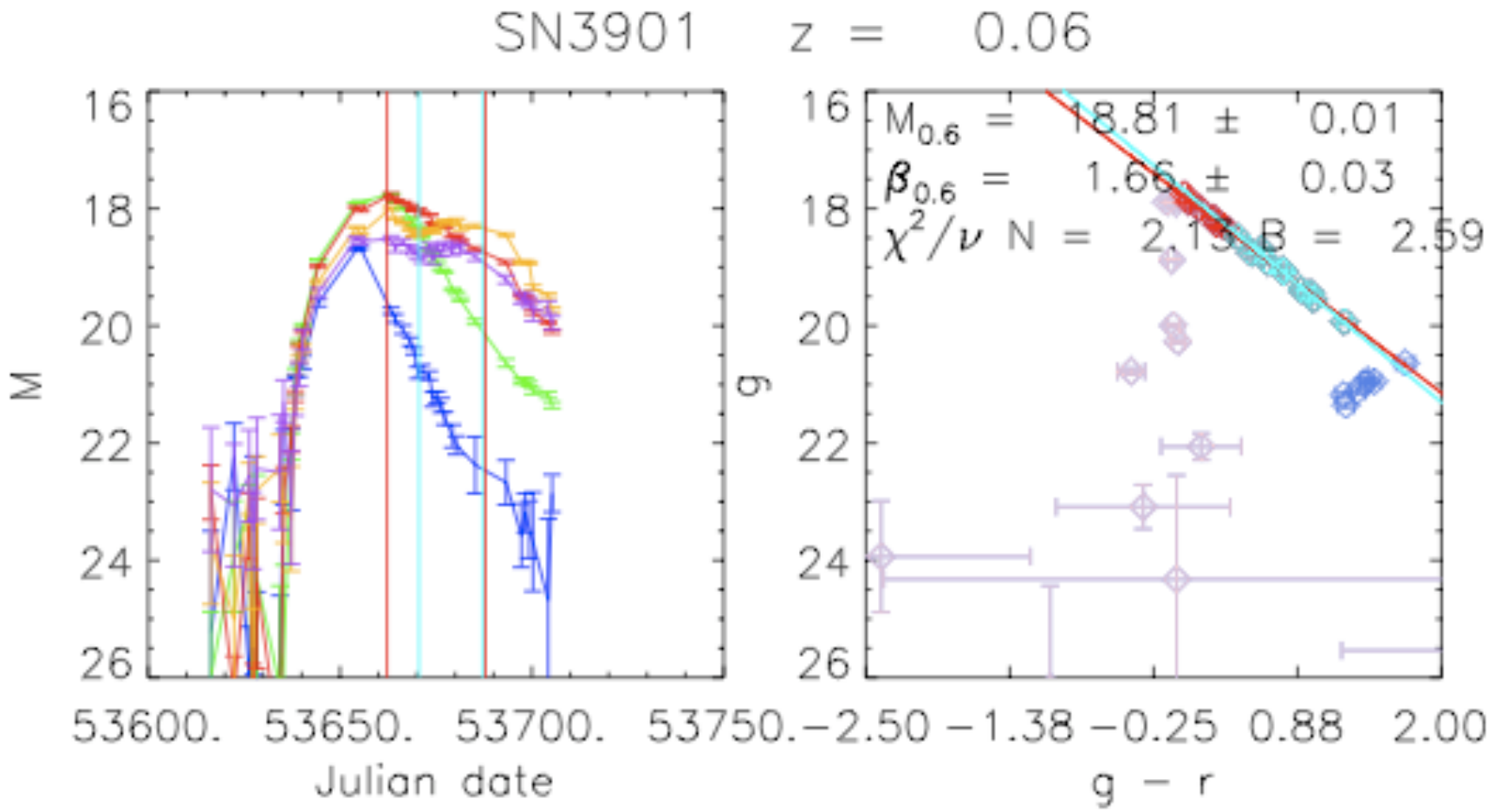
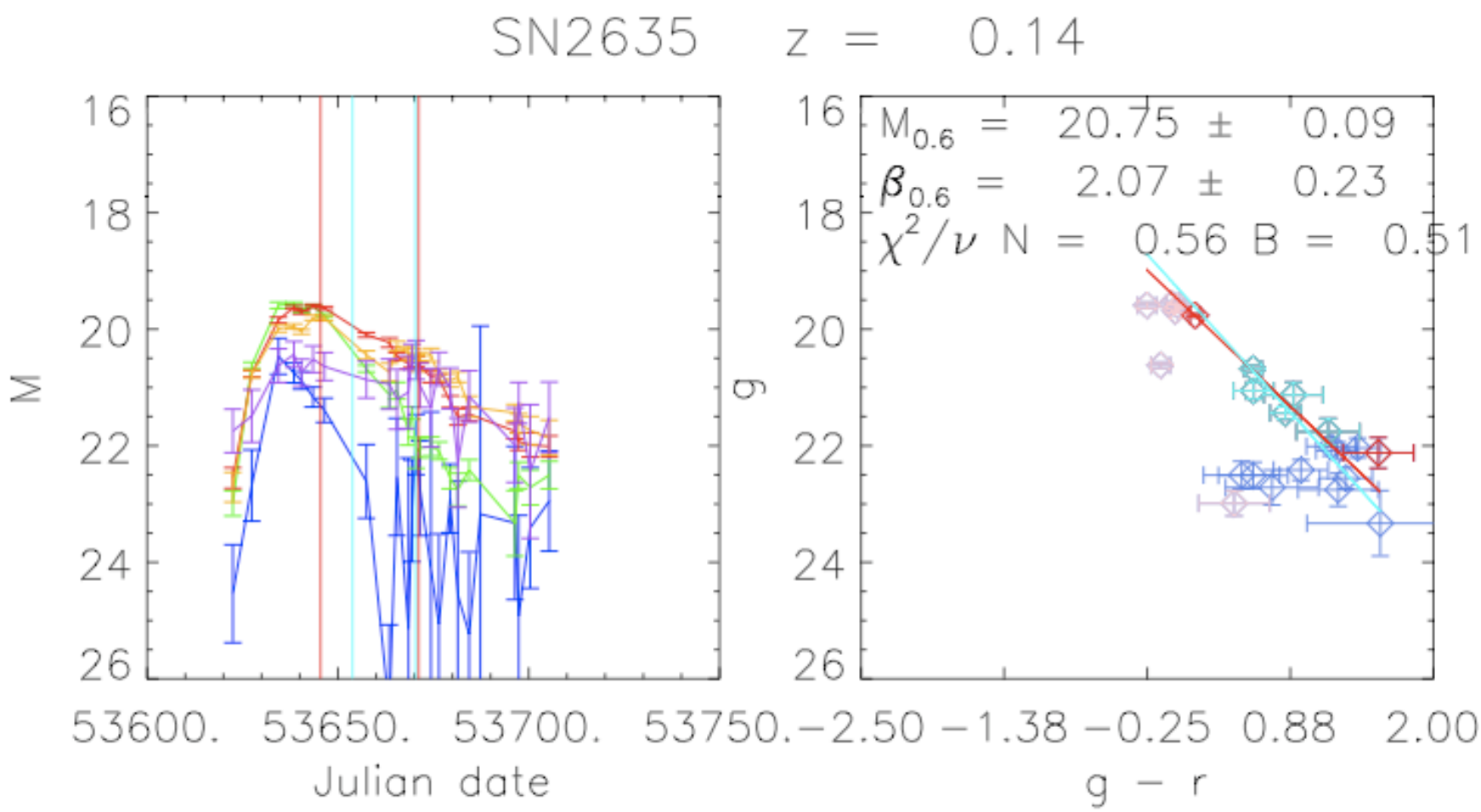
SDSS-SN survey as testbed



SDSS-SN survey as testbed



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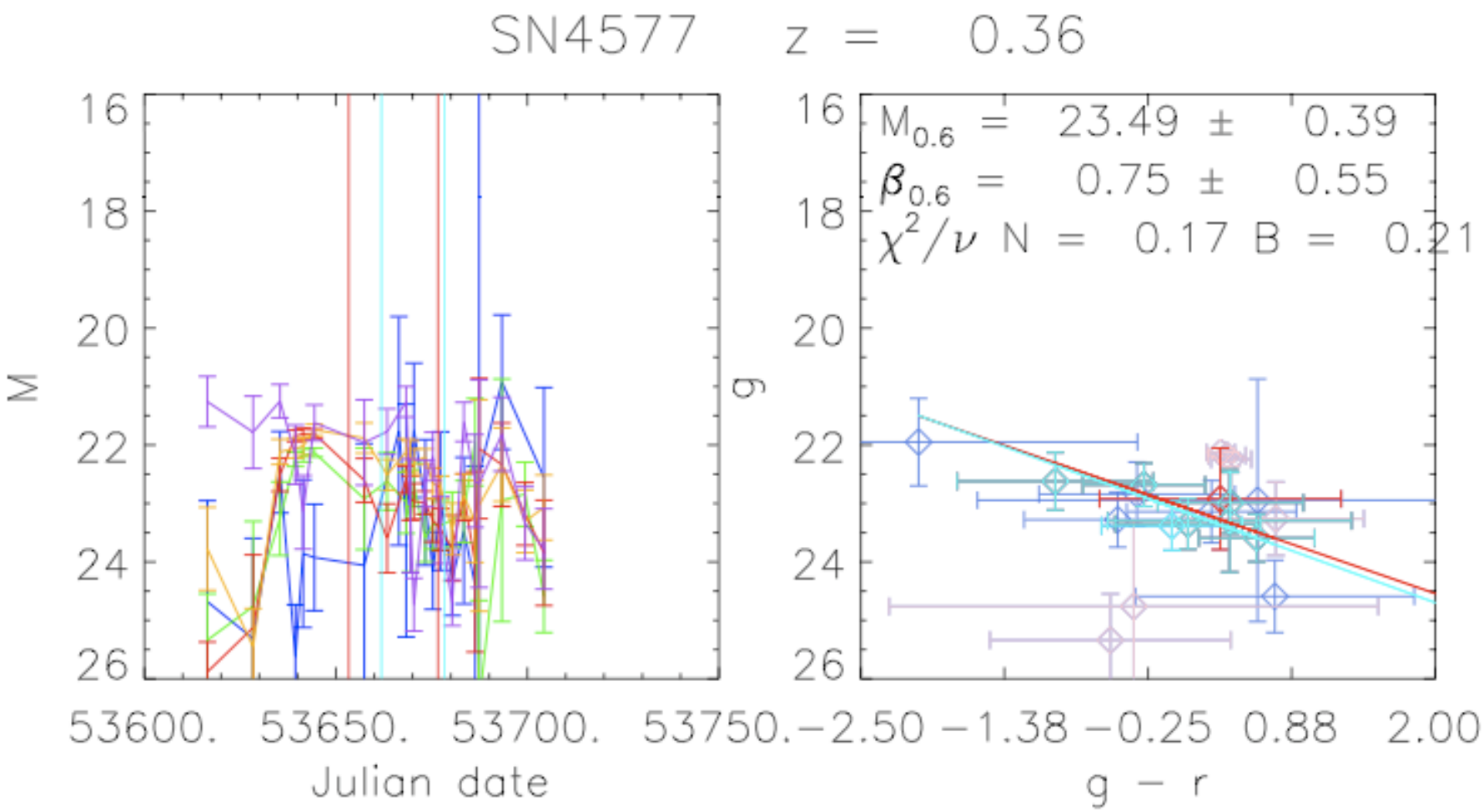

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K-corrections

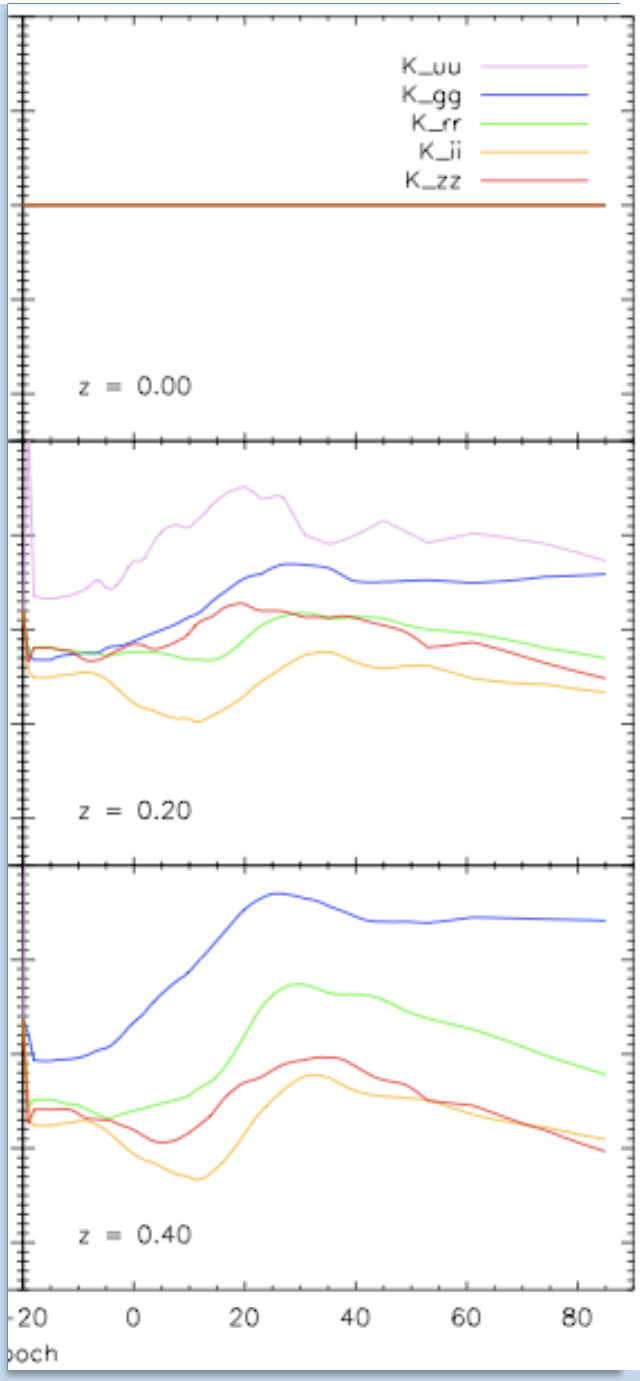
- not completely done yet

- needed to extend range where CMAGIC relation holds

- corrections for reddening due to absorption in host galaxy

- intrinsic reddening

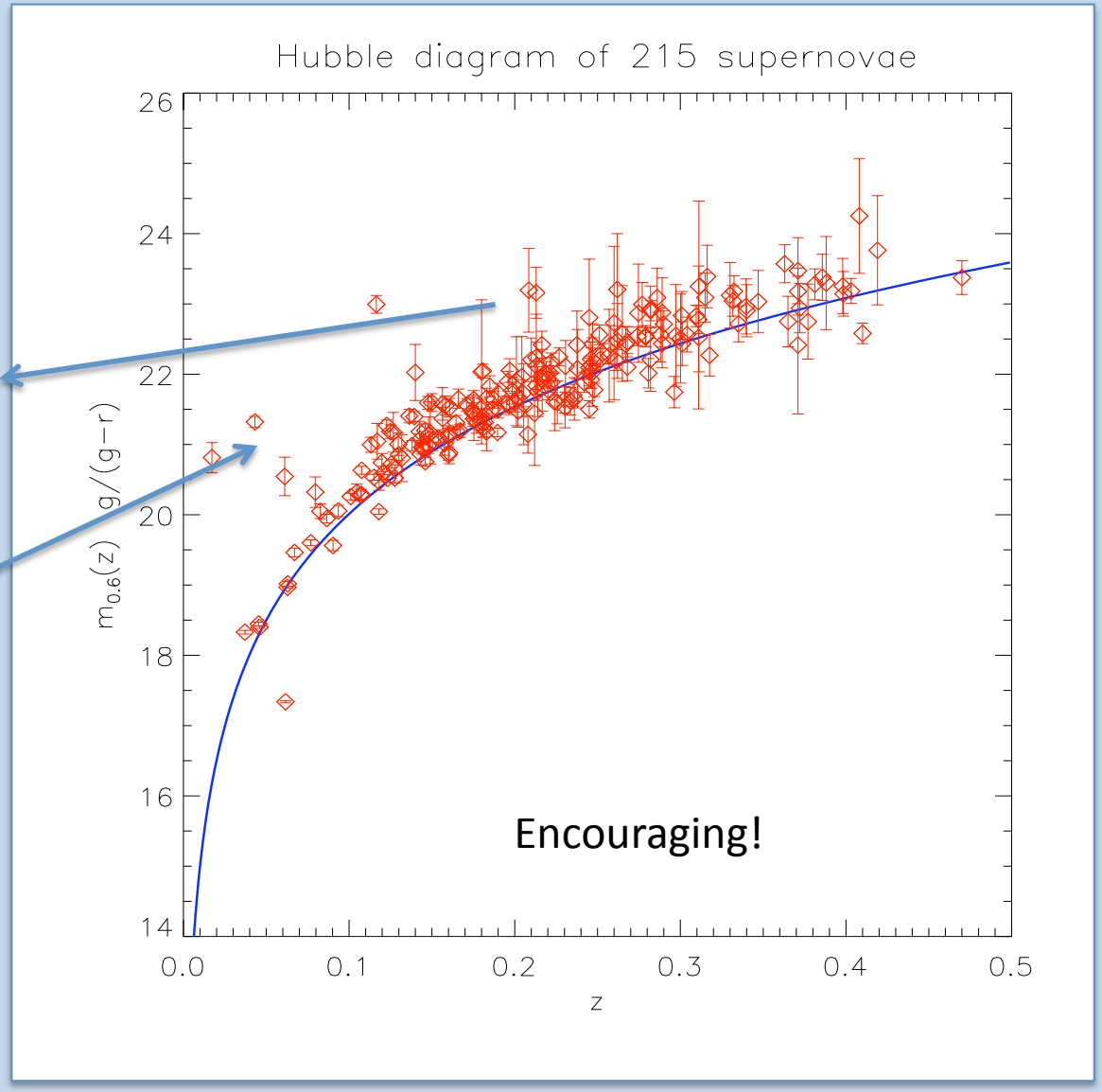
Trade off between intrinsic reddening and external reddening



Hubble diagram

Will hopefully get better with additional information on redening

Under investigation!



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Summary

- may provide a more direct measurement on SN colors compared to more traditional LC fitters

- a first look at CMAGIC is very encouraging

- Downside: only a smaller fraction of the LC can be used for analysis

- No results yet, but we expect to do **cosmology** and SN **classification** soon!