

- f/8 mirror and other ANL mechanical work
- PreCam calibration of DES
- Preparations for Supernova Cosmology
- Students
- Habib/Heitmann application to join DES in the membership committee
- LSST (next talk)

f/8 Mirror Installation Platform

Alistair Walker's f/8 Handler Report:

"The F/8 Mirror Handler system appears to be working reliably, is well-documented, and intuitive to use either via the pedant or by use of a touch-screen tablet. The installation is tidy, access to the upper level is safe. The F/8 Handler is ready to use."

"Steve would come for the first real use of the F/8 Handler. Allen Zhao is likely still to be stuck in the US awaiting his Green Card."



Hal Spinka at CTIO in February during final commissioning

5 days after we left, the mirror was dropped using the old f/8 handler system. Decision on repair or replacement in the next 3 months. If repaired, would be mounted next spring and ANL personnel would go.

Other ANL Mechanical Contributions

- Instrument Control System Commissioned
 - Alarm system protecting camera since last fall.
 - Controls shutter, vacuum, LN2, electronics power, CCD temperatures, much more.
 - No problems! No complaints!
- Electronics Cooling System Commissioned
 - No problems! No complaints!
- C5 Lens Cell (Fifth lens attached to camera)
 - C5 not attached to camera yet, this summer.

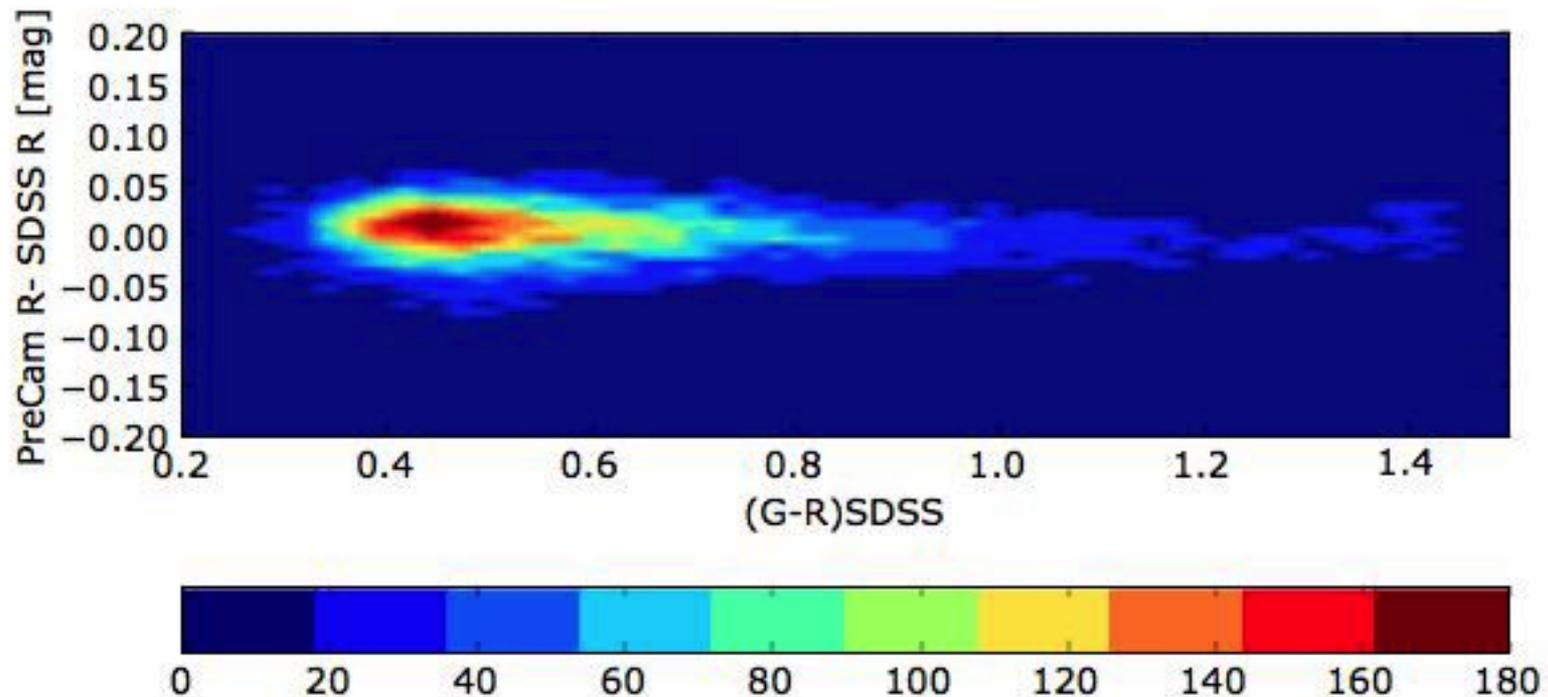
Kyler completing PreCam Instrument and Preliminary Photometry Paper

PreCam, the Precursor Instrument to the Dark Energy Camera

K. Kuehn

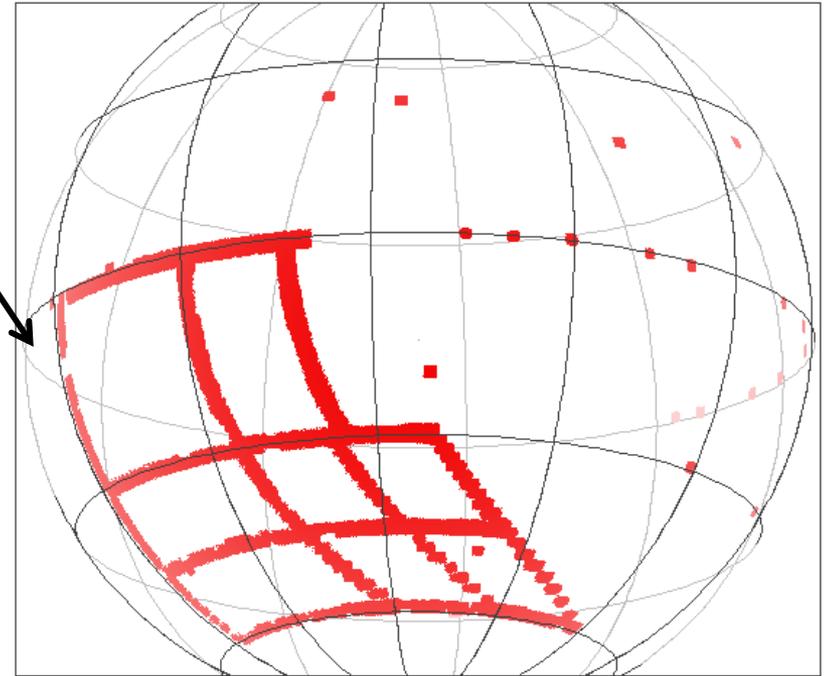
High Energy Physics Division, Argonne National Laboratory, Lemont, IL 60439

PreCam approaching 1% precision compared to SDSS (all 51 nights)
(also not yet using repeated observations of the same stars)



PreCam future running decisions soon

- PreCam 1.5
 - Gap Filler g,r bands
 - Michigan offered Aug/Sep telescope time but too busy with DECam and fields not up.
 - May propose 20 nights for this winter. May not get it on Michigan scope.
- PreCam 2.0 (~100 nights)
 - Fill gaps + full coverage in z,y
 - Fall/Winter 2013



Current PreCam g-band coverage

Preparing for DES Supernova Cosmology

- ANL/Bernstein long strategy paper accepted by ApJ!
- First follow-up paper ready for submission in next week, with 2 undergrads as leading authors.
 - Many more follow-up papers to come...
- Detailed systematic studies by Rahul Biswas retraining the SALT Type Ia model adding SDSS data.
 - Important study for DES SN systematics.
 - Paper this summer.
- Kyle Barbary, Saul Permuter's student, made the short list for Director's Fellowship (decision next week)

New Follow-up to DES SN Strategy Paper

PREPARED FOR SUBMISSION TO JCAP

Type Ia Supernovae Selection and Cosmology Constraints for the Dark Energy Survey

Undergrads

E. Gjergo,^{a,b} J. Duggan,^c J. D. Cunningham,^{c,a} S. Kuhlmann,^a
R. Biswas,^a E. Kovacs,^a J. P. Bernstein^a H. Spinka^a

^aArgonne National Laboratory
9700 South Cass Avenue, Lemont, IL 60439, USA

^bIllinois Institute of Technology
Applied Mathematics Office, E1 Building 10 West 32nd Street, Chicago, IL 60616

^cDepartment of Physics, Loyola University Chicago
1032 W. Sheridan Road, Chicago, IL 60660

Major contributions from
Rahul Biswas and Eve Kovacs

- More complete study of core collapse contamination in Type Ia sample
- 4 sets of cuts instead to 1
- MLCS and SALT compared
- Updated core collapse simulation inputs
- Everything evaluated with DETF Figure of Merit
 - ANL only DES SN group evaluating cosmology effects of analysis choices₇

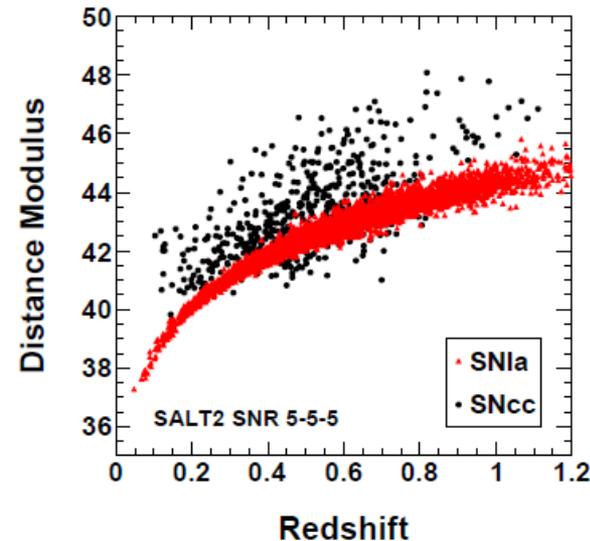
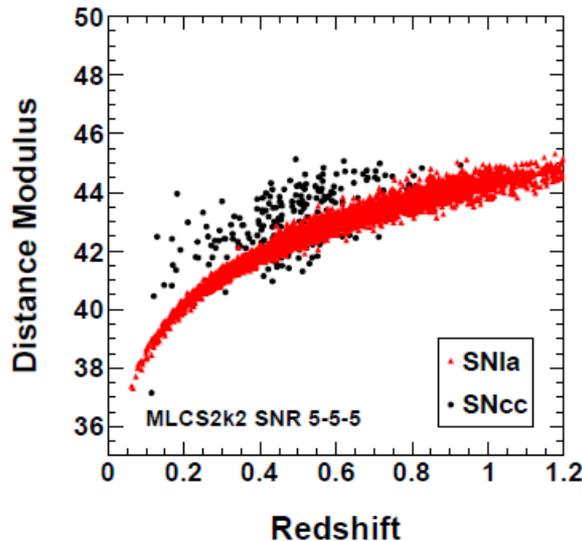


New Follow-up to DES SN Strategy Paper

Type	Bernstein <i>et al.</i>	This Analysis
Ib/c	57	54
IIP	2	5
IIn	2	0
IIL	2	29

Updated Core Collapse Simulation inputs, Type IIL average brightness increased and dramatic increase in Type IIL contamination.

Points out continued fragility of core collapse simulations, SNANA only has 1 Type IIL template!
Too many groups holding onto data...



New Follow-up to DES SN Strategy Paper

SNRMAX Cuts	Algorithm	SNIa	SNcc	Purity	Efficiency
SNR-10-5-5	f_p MLCS > 0.1	3534	88	98%	20%
SNR-5-5-5	f_p MLCS > 0.1	4659	240	95%	27%
SNR-5-5-0	f_p MLCS > 0.1	5949	534	92%	34%
SNR-3-3-0	f_p MLCS > 0.1	9206	3138	75%	53%
SNR-10-5-5	f_p SALT > 0.1	3686	236	94%	21%
SNR-5-5-5	f_p SALT > 0.1	4820	568	89%	27%
SNR-5-5-0	f_p SALT > 0.1	6425	1173	85%	37%
SNR-3-3-0	f_p SALT > 0.1	9776	5298	65%	56%

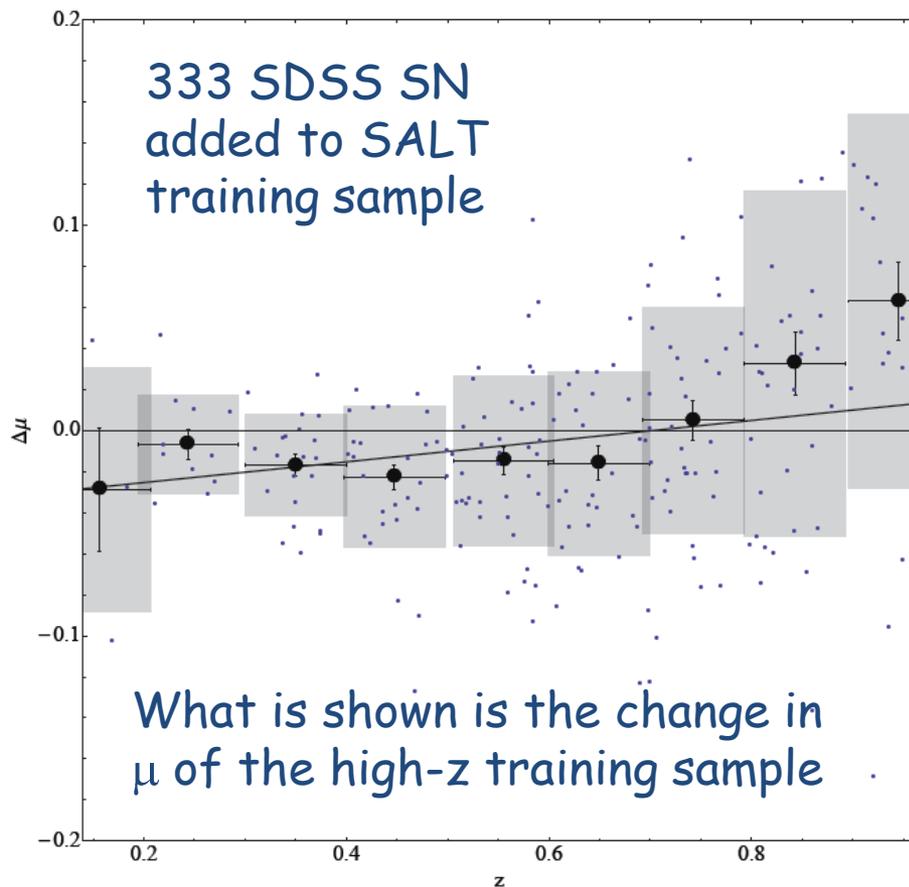
We find in this analysis, relaxing cuts to improve Type Ia efficiency makes the Figure of Merit worse due to lower purity.

Bernstein et al. cuts still quite reasonable.

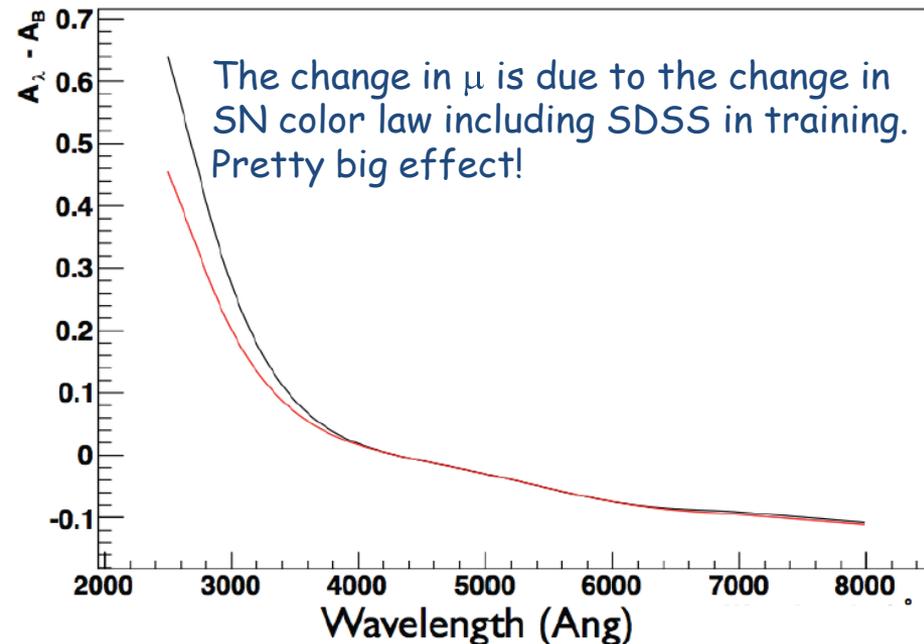


Joint Light Curve Analysis (JLA) Involvement

SDSS: R. Kessler (UofC), J. Marriner, (FNAL) S. Kuhlmann, R. Biswas (ANL), J. Mosher (UPENN)
SNLS: J. Guy, P. Astier, N. Regnault, R. Pain, M. Betoule (Paris)



Important study for DES SN systematics



ANL/DES Students

- Former:
 - SULI student Ian Crane, currently Tony Tyson's student, awarded NSF Fellowship to work on CCD edge effects for LSST (following published ANL DES study at the APS)
 - SULI student Tara Hufford, astrophysics grad school at Georgia. (Tara and Ian both co-authors of the Bernstein paper)
 - Princeton undergrad Trevor Bailey at Santa Cruz this summer
- Current:
 - Eda Gjergo -- IIT, back this fall for 2 more years, I am undergrad research credit co-supervisor.
 - Jeff Duggan -- Loyola, part-time this summer and 1 more year with research credit. Supervisor: John Cunningham
 - Lynn Stanwyck -- Lemont High School, working with us this summer and independent study next fall.
 - Matthew Kubacki -- Lewis Univ., SULI student this summer