

# Dark Energy Session Report

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# Science Goals

- Testing alternative theories [Bean, Jain]
  - Generic forms for deviations implied by symmetries and structure of deviations from GR
  - Key observations tests:
    - Measure growth, lensing and velocity fields
    - Need to understand systematics that might “look” like deviations from GR

# Recent Observational Results and Upcoming Surveys

- SDSS III continues to deliver precision measurements of BAO.  $H_0$  consistent with Planck but below best SN value [Ho, Padmanabhan, Weinberg]
  - Anticipate on-going improvements [DESI as first Stage IV experiment]
- Supernovae are standard candles in the IR – even I band is better [Kirshner]. HST as WFIRST prototype.



# Current state of play

- SN + BAO + CMB favor  $w < -1$ . Universe will be torn apart in a big rip



# In praise of multiple data sets...

- Challenges of photometric redshifts [Newman]
- Forward modelling of AFTA and LSST data [Schneider]
  - Advantages of a optical AFTA band to minimize galaxy model uncertainty
- Likelihood formalism for multi-data set [Krause]
- Planck/Herschel as a high  $z$  cluster finder [Dole]

# Things that I didn't hear that I wish I did....

- How to make use of data in the quasi-linear regime to test GR and probe DE?
- How to take advantage of the higher number density of galaxies in both the spectroscopic and lensing surveys?
- What are the key tests to distinguish between systematics and new DE physics?