Sloan Digital Sky Survey (E885)

Goal:
Conduct fundamental research in cosmology, particularly formation & evolution of galaxies and large scale structure

Approach:
Digital map of ¼ of sky in 5 bands
Spectra of 1 million galaxies, 100,000 quasars

Resources:
2.5 m telescope in New Mexico
Large CCD camera
640 fiber spectrograph
11 partner institutions
Delivered "beam" vs. 5 yr. baseline
Current operations funded through June, 2005

A proposal is being developed to continue operations for another 2 or more years (fill the gap).
Data Distribution

Data Release 1 to public

- March 2003
- www.sdss.org
- 2000 sq. deg. of sky
- 9 terabytes downloaded by public so far
- Science publications:
  - 141 by SDSS collab
  - 59 by public

Data release 2

- Scheduled for early 2004
- 4000 sq. deg

Need more disk space!
Three-dimensional Power Spectrum (Tegmark et al. 2003)

Distribution of Galaxies around Sun to z=0.15
(Blanton 2003)

\[ \Omega_M h = 0.213 \pm 0.023 \]
\[ \sigma_8 \text{ (gal)} = 0.96 \pm 0.02 \]
\[ n = 0.995 \]

\( \Lambda \)CDM adjusted to \( L^* \) galaxy

Integrated Sachs-Wolfe Effect: Positive correlation between \( \Delta T \) and \( \Delta n \) of \( \Omega_M < 1 \).

SDSS vs WMAP: Correlation of temp. fluctuations with galaxy counts (Scranton et al. 2003)

Strong evidence for dark energy dominated universe (\( \Lambda \)CDM)