

## Scientific Strengths of SDSS

*Large data base:* The five-year Survey will produce  $10^6$  galaxy spectra,  $10^5$  QSO spectra,  $10^6$  QSO images,  $10^8$  galaxy images and photometric  $z$ 's, and  $10^8$  stars with 5-color photometry.

*Homogeneity of the data:* The Survey yields  $10^6$  galaxies and  $10^5$  QSOs in the identical spectrograph with very high s/n;  $10^8$  galaxies and  $10^8$  stellar images are cataloged with 5-color, very well-standardized photometry and excellent astrometric accuracy.

*Exceptionally well-characterized samples:* Galaxies selected for the LSS survey have extremely accurate, 5-color photometry and morphology. *LSS conclusions are known to depend on color and morphology!!* QSOs are selected from 5-color space, with only one narrow deadband near  $z \sim 2.2$ .

*Science not-related to LSS:* For stellar population studies, we have  $10^6$  galaxy spectra with the identical spectrograph, *with detailed morphology and 5-color photometry available for each object.* The Survey produces  $> 10^5$  unusual stellar spectra: CVs, white dwarfs, metal-poor halo stars, halo planetary nebula, faint carbon stars (halo giants, nearby dwarfs); implications not just for stellar astronomy, but for galactic structure, high-latitude extinction, etc etc. Numerous asteroids will be found.

*Discovery potential:* Dozens of spectroscopic fibers are available in each field, unrelated to the LSS or QSO surveys, for objects of odd color and/or morphology, FIRST radio sources, *ROSAT* All Sky Survey sources, etc. The filter system is especially well-optimized for  $z > 5$  QSOs.

*Archival value of the imaging archive:* **The 5-color, 0.4" pixel, extremely well-calibrated imaging data bank of the entire northern sky at  $b > 30^\circ$  will be a community resource for decades.**