

# An Extraordinary Map of the Universe

**T**he most ambitious astronomical survey ever undertaken. The largest three-dimensional reconstruction of the universe ever made. A quarter of the sky—one hundred million celestial objects—observed and recorded as 15 terabytes of digital information.

The Sloan Digital Sky Survey will take a giant step in the science of mapping the universe, to create a new and unparalleled picture of the cosmos. As patterns and structures emerge from the survey data, they will illuminate the history and origins of the universe itself.



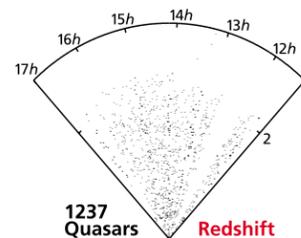
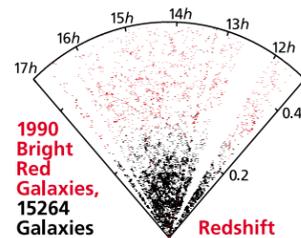
First Light image, May 1998



World's largest CCD camera

## Transforming Astronomy

For hundreds of years astronomy has been done one object at a time, using general-purpose telescopes. The SDSS is a new concept—a specially designed “astronomical experiment” to digitize the brightest 100 million objects and to determine the distances to the million brightest galaxies. The silicon universe created by the SDSS will be accessed by virtually every astronomer. The SDSS sky will be open, day and night, good weather or bad. It will be the field guide to heavens for the next fifty years. The new approach to astronomical research pioneered by the SDSS has already inspired other astronomical experiments.



$-1.25^\circ < \delta < 1.25^\circ$

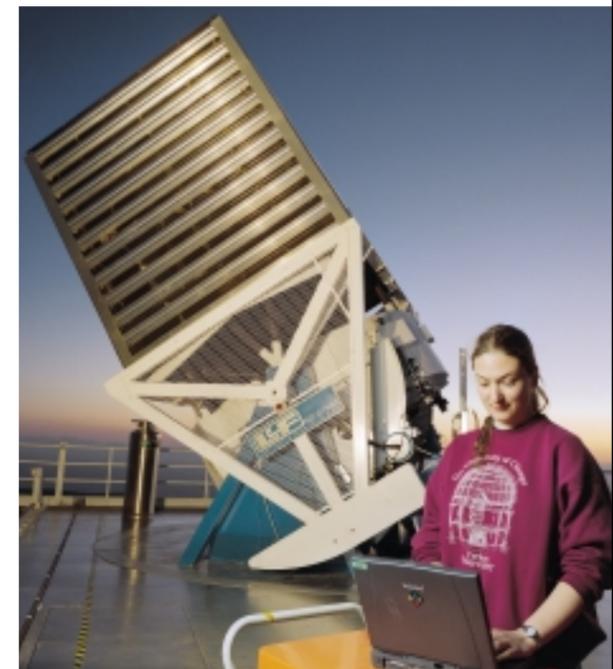
## From the Solar System to the Edge of the Universe

Although less than ten percent of the sky has been digitized, the Survey has already produced stunning science. The SDSS has discovered eight of the 10 most distant quasars, including the most distant one. Light left this quasar when the universe was less than a billion years old and was a factor of 6.8 times smaller. The first slice of the 3-D map of the universe from a sample of 15,000 galaxies extends out to three billion light years. The slice from a sample of 1200 quasars extends nearly four times as far. The quality of the digital images has enabled SDSS scientists to use the tiny gravitational distortion of the images of distant galaxies by nearby galaxies to map the extent of the dark matter halos of galaxies, showing that they contain more than twice as much mass as previously believed. Early data also turned up an unusual type of comet and the first solitary brown dwarf ever found.

# sdss.org

## The People's Universe

The expanse of sky between the visible stars was once the province of astronomers alone. The Sloan Digital Sky Survey will make available to every schoolchild the vast expanse of universe once only accessible to a handful of observers using ultrapowerful telescopes. The Sky Survey will use the power of the Internet to bring into everyone's view the millions of objects beyond the visible stars of our own galaxy to the farthest reaches of the universe.



Graduate student Connie Rockosi operating the 2.5m telescope



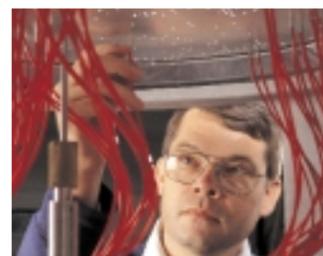
First SDSS collaboration meeting



Most distant quasar,  $z=5.8$



Comet Dalcanton



Rich Kron plugging optical fibers



Jim Gunn assembling the camera



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