

SDSS-IV to SDSS-V

The Expanding SDSS Legacy

Michael Blanton (NYU), SDSS-IV Director
Juna Kollmeier (Carnegie Observatories), SDSS-V Director

*Take note of the Dannie Heinemann
Prize announced today for David
Weinberg & Robert Lupton,
regarding their work on SDSS*

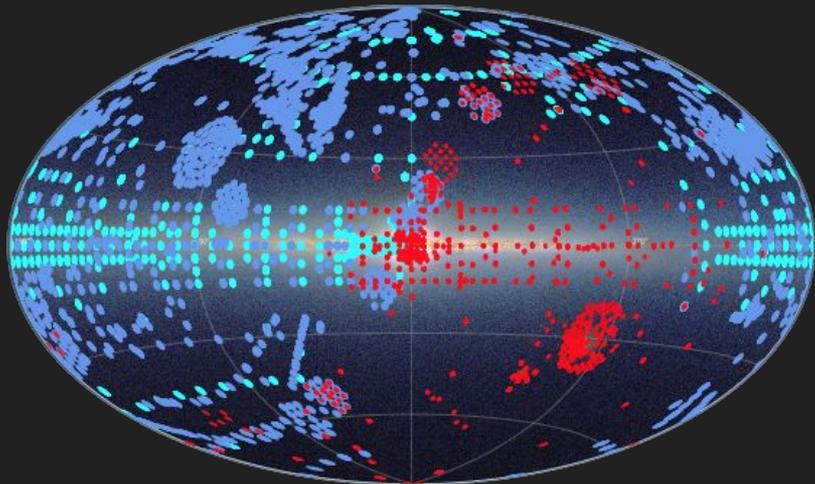


SDSS-IV in a nutshell

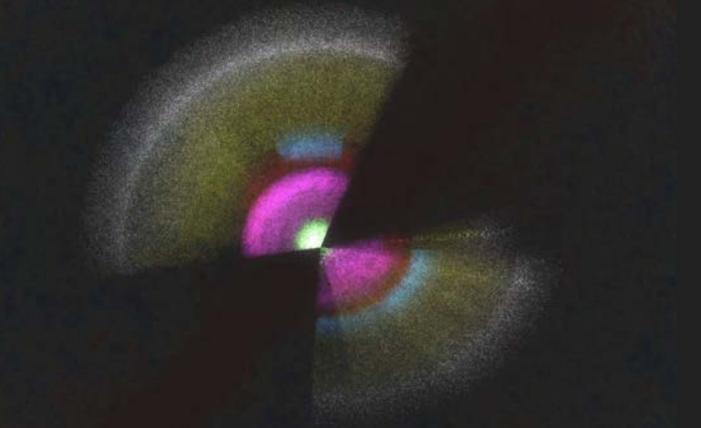
*Culmination of 20+ years
of SDSS observations
with over 10,000
spectroscopic plug plates
like this one.*



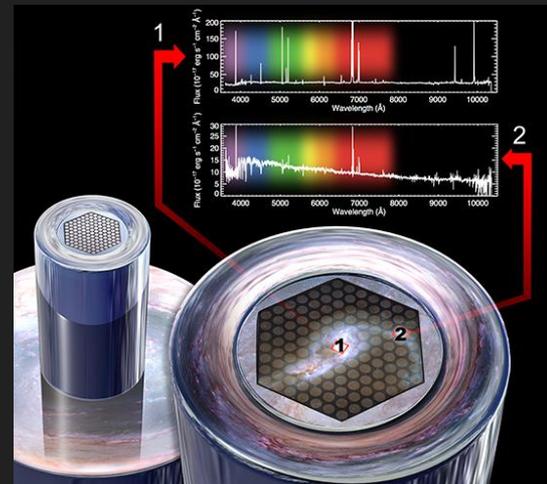
700,000 stars in Milky Way and its satellites with APOGEE



*3,000,000+ redshifts with eBOSS +
predecessors : largest 3D map of the universe*



10,000 Nearby Galaxies in MaNGA



SDSS-IV in 2020

Needed to develop partially-remote observations under COVID-19:
creative and dedicated staff makes this possible to do efficiently.

Still reaching all of its original goals, but delayed by about ~ 4 months.



Finished Aug 24, 2020

*Sloan Foundation Telescope
Apache Point, New Mexico*



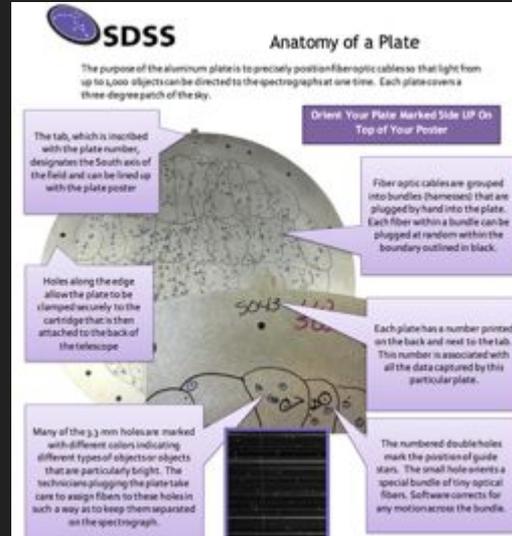
Finishing Jan 21, 2021

*du Pont Telescope
Las Campanas, Chile*

**Look for upcoming science results
and final data release in 2021!**

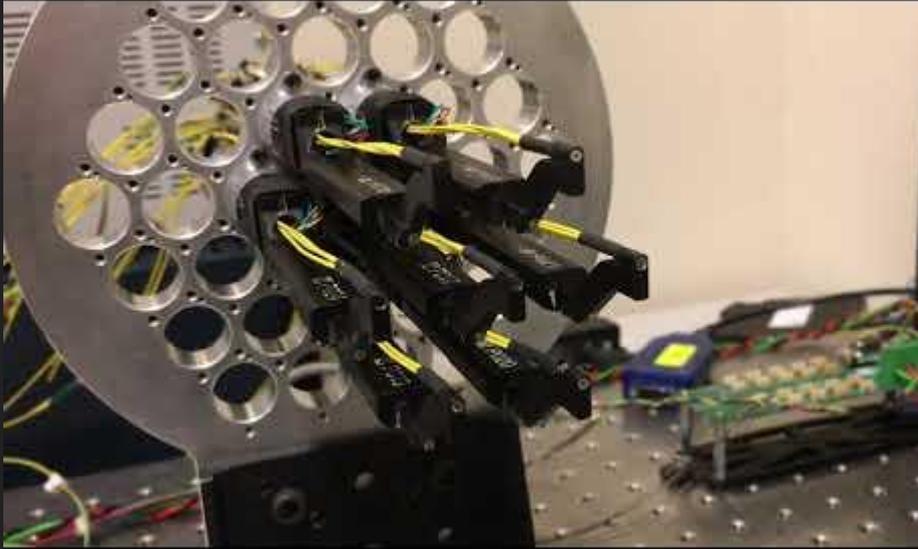
Plates for Education

Hundreds of plates have been distributed to classrooms, accompanied by curricula and teacher training.



<https://sdss.org/education/>

From SDSS Plates to SDSS Robots



Industrial-scale spectroscopy, with data spanning hours to decades, is *essential* for characterizing a wide variety of astronomical sources

The Universe in SDSS-V

From stars →



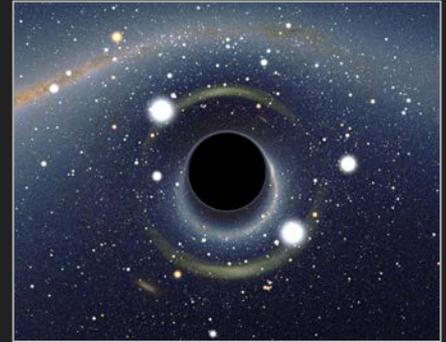
← To quasars



Milky Way Mapper
will measure stars in
all stellar populations
and across our Galaxy



Local Volume Mapper
will study how stars form
and exchange energy
with interstellar gas

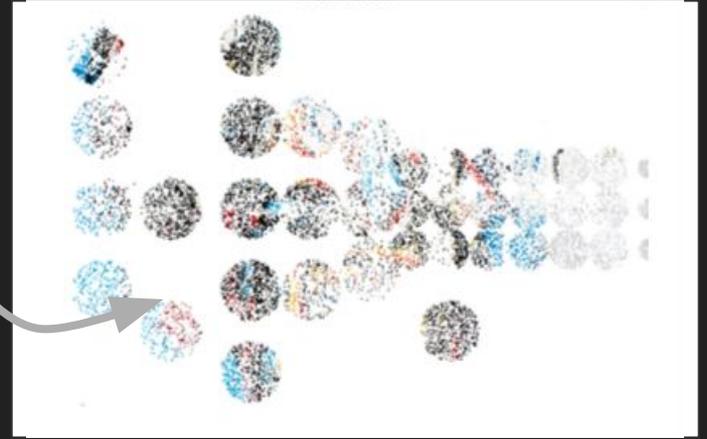


Black Hole Mapper
will trace how black
holes evolve on short
and long timescales

Why So Many Objects?

Imagine only being able to see *part* of a painting!

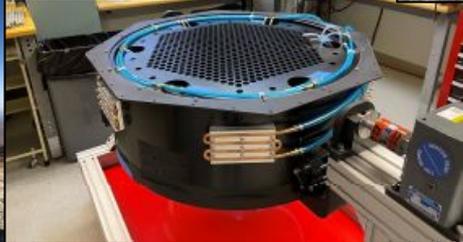
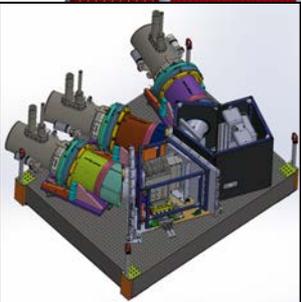
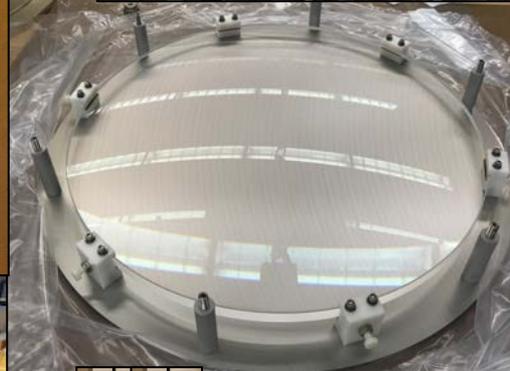
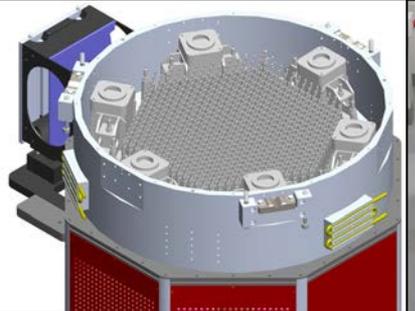
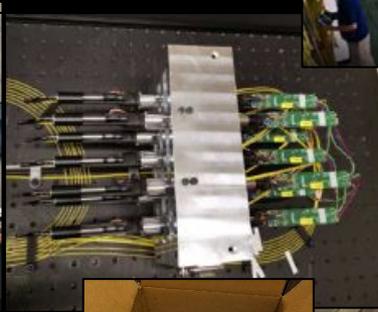
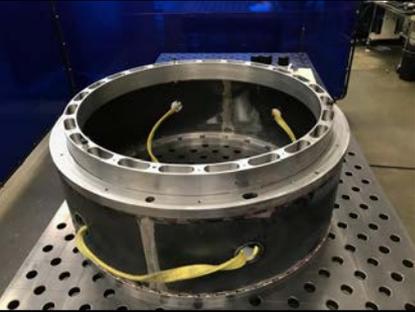
Robots let us go from a sparsely sampled view of the Universe...



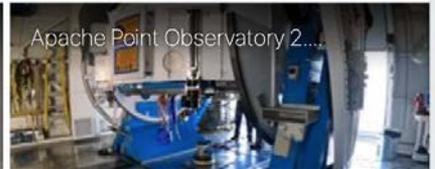
Untitled, Jean-Michel Basquiat

...to a densely sampled map that will reveal stellar/gas motions and chemical patterns on all scales!

2020: WHAT. A. YEAR.



2020: WHAT. A. YEAR.



We are on-sky and taking data!

