



Where We Are: Software, Strategy, Science

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Paris Collaboration Meeting

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Summary

We are two years into a very ambitious six-year program.

Given the scope of what we are trying to do, we are in astonishingly good shape.

We have a lot of exciting challenges ahead.

We already have unprecedented data sets that present great science opportunities.

SEGUE-2

PI: Connie Rockosi, SS: Tim Beers, SST Chair: Heather Morrison

- Observations completed July 2009.
- Data pipeline upgrades and data reduction for DR8 complete.
- Lots of current activity on data organization and testing for DR8.
- Work beginning on SEGUE-2 survey paper, DR8 paper.
- Science!

Wide range of investigations underway using SEGUE-2 data (often combined with SEGUE-1 data).

Chemical and kinematic structure and substructure of thin and thick disks, stellar halo, mass profile of dark matter halo.

Several science papers submitted.

Many opportunities for new people to get involved.

BOSS

PI: David Schlegel, IS: Natalie Roe, SS: Kyle Dawson, SSTc: Martin White

- BOSS imaging complete, exceeded goals.
- Spectrograph commissioning Sep-Dec 2009, successful.
- 8 months of “normal operations” data in hand.
- Galaxy target selection nearly finalized (pending i_{fiber} limit).
- QSO target selection semi-finalized. Will evolve through survey.

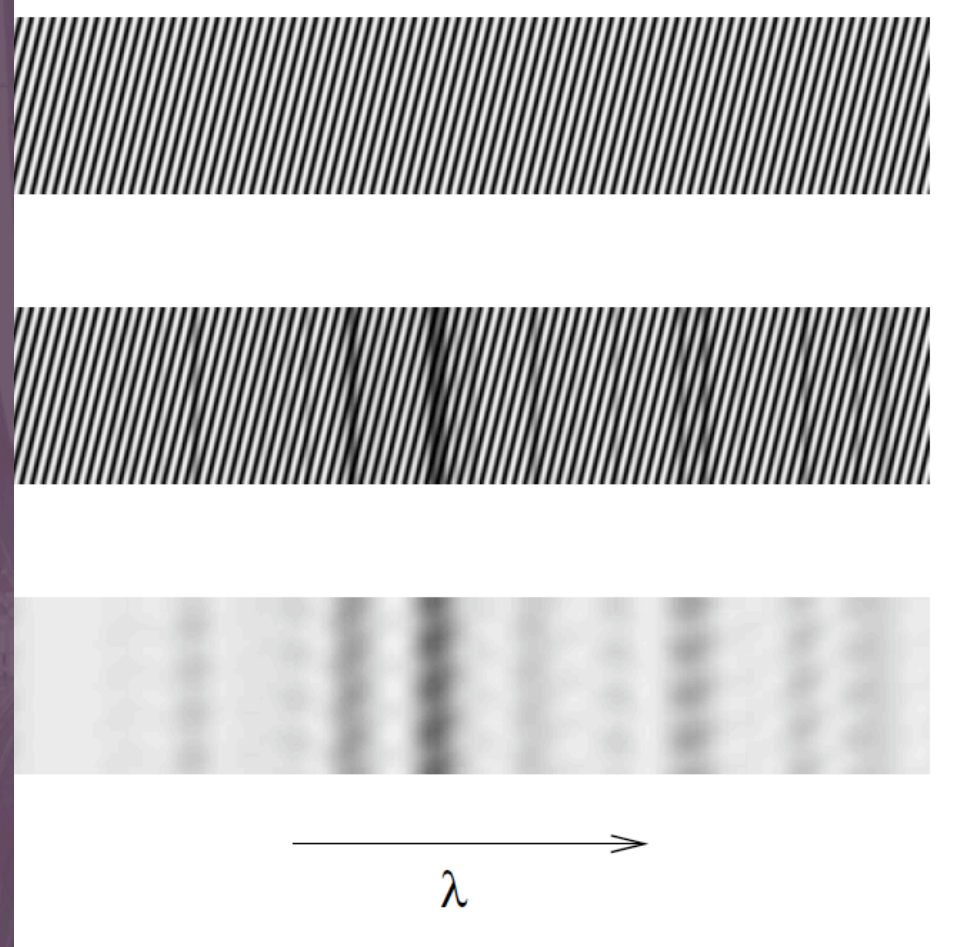
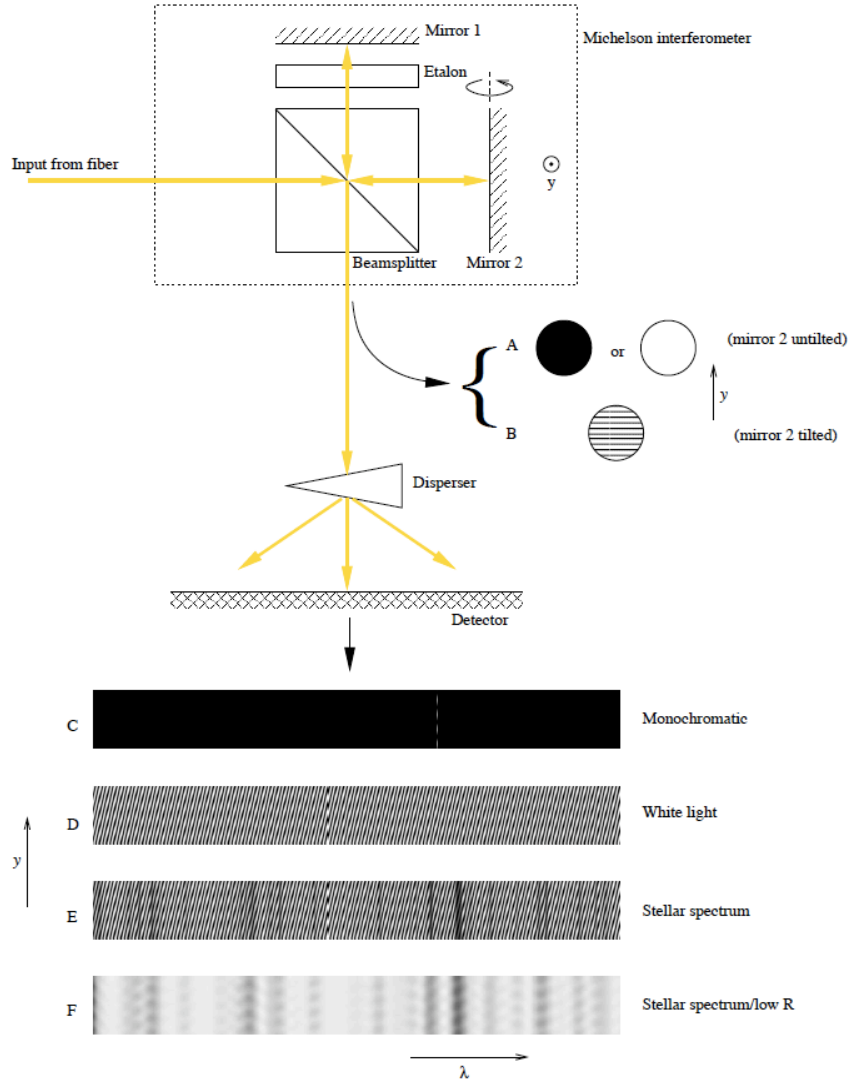
Hard problem!

- Operations and strategy review led by K. Dawson, nearly complete. Need substantial efficiency gains relative to Year 1. Will significantly change S/N thresholds. Not much breathing room.
- Continuing work on operations software, infrastructure hardware.
- Lots of ancillary science data, much more this fall (Stripe 82).
- Starts on target selection papers. Spectrograph and survey papers?
- First-year science underway: galaxy clustering, galaxy evolution, Ly α forest, metal-line absorbers.

MARVELS

PI: Jian Ge, IS: Xiaoke Wan, SS: Scott Gaudi, SSTc: Keivan Stassun

- Instrument commissioned in September 2008
- Two years of data collection, running slightly ahead of forecast.
- “Year 3-4” will begin after fiber system upgrade in November.
- Target selection issues: too many giants (30%), some low visibility (rapid rotator) stars. TS will be refined, switch from spectroscopy to reduced-proper-motion for dwarf/giant discrimination.
- One-month RV performance for bright stars meets science requirements. Somewhat below requirements for faint stars.
- Multi-month RV scatter of tens of m/s for bright stars, worse for faint stars. Pipeline improvements to fix this scatter are focus of current team effort. Crucial to science. Hard problem!
- Possibility of 2nd instrument next summer, pending pipeline improvements and availability of funds.
- Lots of brown dwarf science going on now. MARVELS already has unique sensitivity in this regime.



Van Eyken, Ge, & Mahadevan 2010

APOGEE

PI: Steve Majewski, IS: John Wilson, SS: Ricardo Schiavon

- Hardware development proceeding on (aggressive) schedule and budget. Commissioning expected in early 2011.
- Software and survey strategy reviews: preliminary in Dec. 2009, mid-course in Aug. 2010. Much progress in between.
- Basics of MARVELS co-observing strategy now in place, details (e.g., plate scheduling algorithm) still to be finalized.
- Field selection largely complete, mix of 1-hour (bulge) fields, 3-hour fields, 16-hour fields, and 24-hour fields. Targeting strategy within long fields is still being developed.
- Two software challenges: optimal spectral extraction and reduction, automated measurement of stellar parameters and abundances. Good progress on both fronts, including linelist analyses for abundances.
- Call for ancillary science proposals just circulated to sdss3-general.
- Team/collaboration challenge: being ready to jump on early data, assess and fix problems, move quickly to optimal strategy. 3 years!!

Descriptions of SDSS-III

- Sloan, NSF, and DOE proposals.
- Project Description on sdss3.org based on NSF proposal.
- Science Requirements Docs. for MARVELS, BOSS, APOGEE.
- Project Execution Plan.
- Glossy brochure.
- Astro2010 White Papers.

In Process:

- SDSS-III overview paper.
- DR8 paper.
- SEGUE-2 technical paper.

Ahead:

- Other technical papers on surveys, instruments, pipelines.

SDSS-III Overview Paper

- Analogous to York et al. (2000) SDSS Technical Summary paper.
- Provide unified view of SDSS-III program, with short accounts of individual surveys.
- Provide community reference for individual surveys in advance of individual technical papers.
- Announce that we are here!

Draft/outline circulated on sdss3-general, available at

<https://trac.sdss3.org/wiki/OverviewPaper>

If you are named for paragraphs or figures, please look at draft ASAP, let me know if you have questions or can't do what you are listed for.

Goal is to circulate complete draft to collaboration by end of September, submit paper by end of October.

DR8 paper is also underway, organized by Michael Strauss.

SDSS-III Science

General Principles:

- Anyone can work on anything.
- You are required to let people know what you are doing. Post projects to project page. Describe paper plans via e-mail lists, WG meetings and telecons. Post manuscripts before submission.
- Groups pursuing similar science are encouraged but not required to collaborate. We have a collaboration with great breadth and depth of expertise.
- Don't assume "someone must be doing that already." Often not true. Ask via e-mail list or telecon, or ask SST Chair.

Lots of opportunities to do ground-breaking science with SDSS-III data **now**. Even more in the very near future.

Let's get going!