



Outcomes and Challenges





New Science with BigBOSS: It's the huge samples!

Extragalactic

- Galaxy evolution surveys
- Cluster surveys
- Community fibers

Galactic Science - Assembly history of galaxies

- MW substructure
- Inner Disk and Bulge
- M31

Transient Science

- Before, During & After the
Transient
- Discovering transients with
BigBoss

Diffuse Media

- Sight lines
- Mapping extinction
- Improving BAO



Enabling Community Science with Big Boss

- **Observing modes**
 - BBQ/community fibers vs.
 - PI programs (queue/service?)
 - Combining PI programs to fill fibers (snapshot/opportunity queue)
 - Transient modes/cadences
- **Technical Issues**
 - Blue response to 3650A
 - Resolving power
 - Airmass up to 2
 - Throughput, faint limit
 - Guider data
- **Operational Issues**
 - Dynamic Scheduling
 - Target selection & astrometry
 - Calibration (RV, high S/N ratio, metallicity, flux)
 - Exposure time/sub-exposures
- **Pipeline Issues**
 - Quick look spectra
 - Spectra in bright time
 - Coadding spectra/long integrations
 - Sub-exposures available
 - Misc. metadata
 - Pipeline plugins
 - Analysis tools



Community Interface

- Continuing community discussion and input through NOAO to the project
- Mechanisms to continue to inform the community
- BigBOSS science working groups?
- Mechanisms for community participation?



What Comes Next?

- Written Report
 - Consolidate science cases and requirements
 - Summarize technical, operational, pipeline issues for community science
 - Recommendations
- Who Gets the Report?
 - Director
 - Project
 - Community
 - (Agencies)
 - Session at Austin AAS



Advocacy

- Silva's big picture. BigBOSS doesn't live in a vacuum
 - Part of a system
 - Difficult funding environment
- We all have a responsibility to advocate
- Individual voices matter

Transient Science

- Before the Transient – nearby galaxies catalog
- During the Transient
 - Short response (minutes) to triggers (LIGO, ICECUBE, GRBs)
 - BigBOSS Transient Factory
- After the Transient
 - e.g. SN host redshifts & metallicities, variables
- Time resolved spectroscopy (cadence of cal fields, quasar candidates)

Galactic Science

- Assembly history of galaxies - Merger vs. in situ formation in MW; kinematics and chemical tagging
- MW substructure
 - RR Lyraes identified from variability; get velocities
 - BHB and RGB/MS stars
 - Dwarf galaxies, Magellanic Stream, rare populations
- Inner Disk and Bulge
- M31

EGal Science

- Galaxy evolution surveys
 - How does stellar mass grow in dark halos?
 - Astrophysical processes
 - Connect $z=0.5$ & 0.8 with $z=0$
- Cluster surveys
 - Massive cluster samples from other surveys vs. redshift
 - Weak lensing maps
 - GCs in Virgo
 - SFR in the fundamental plane
 - Find rare objects
- Community fibers
- Very bright LBGs
- Very IR lum starbursts – what triggers starburst activity? SMBH accretion
- High mass galaxies at $1.0 < z < 1.5$

Diffuse Media

- Tracking process of how gas flows into and out of galaxies
- Mining for close QX pairs
- Extinction mapping
- BAO with nearby galaxies - target galaxy to improve BAO