

SDSS & Chandra Source Catalog + NHFP Report

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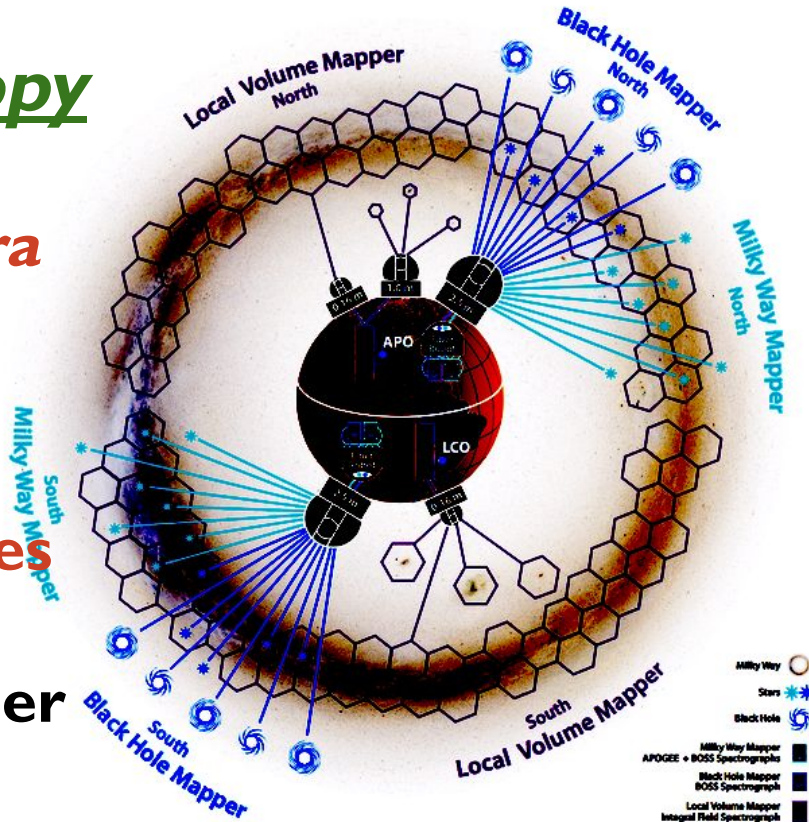
for the Oct 2024 CUC meeting

SDSS-V 2020 - 2027

<http://www.sdss.org/future>

All-Sky Spectroscopy

- ❑ **Black Hole Mapper**
 - Repeat QSO spectra
 - eROSITA followup
 - $r < 21.5$ mag
- ❑ **Milky Way Mapper**
 - stars in IR at high-res
 - $H < 14$ mag
- ❑ **Local Volume Mapper**
 - IFU of nearby galaxies



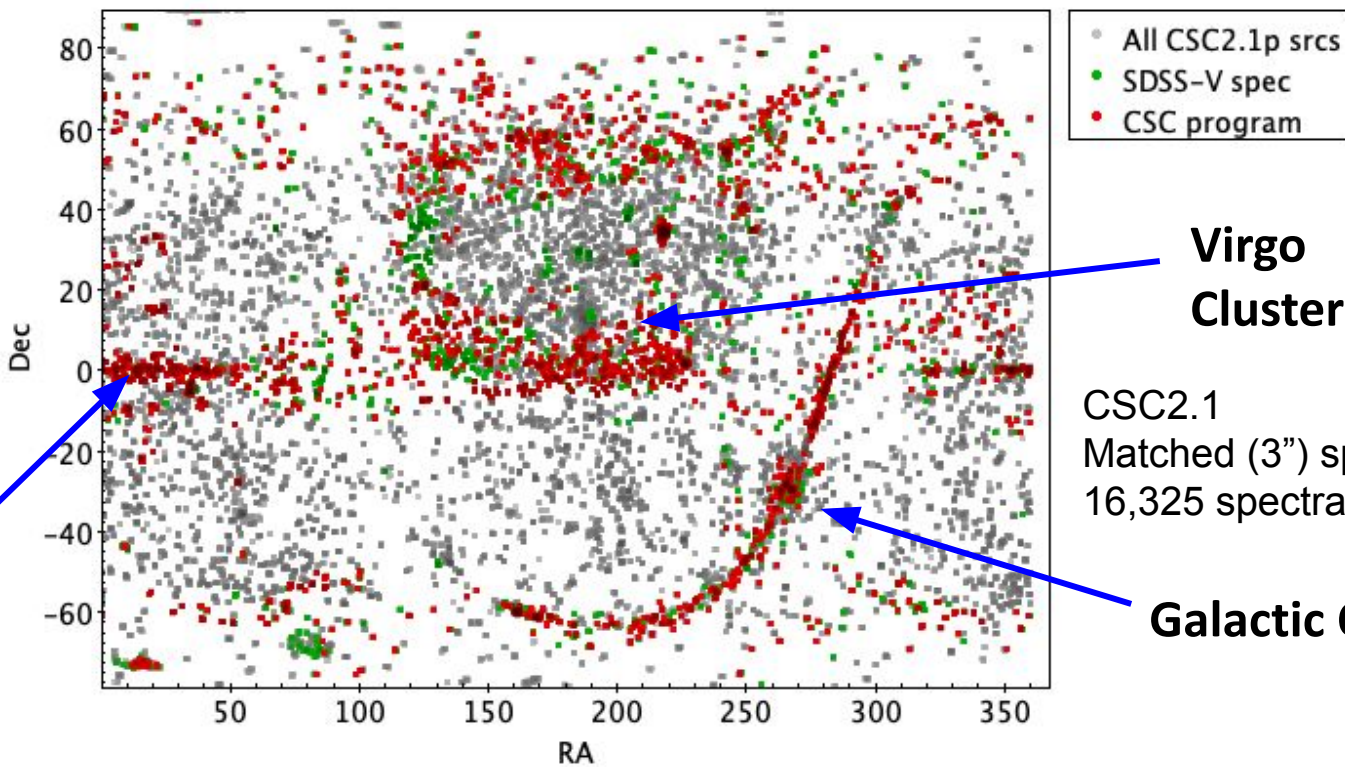
SDSS-V, SAO + CXC

- ❑ **SAO joined SDSS-V as a full member: \$230k/yr for 4 years**
Includes 50% funds from the CXC
- ❑ **CSC:**
 - ❑ **Only covers ~2% of sky**
 - ❑ **Much better sensitivity and spatial resolution than eROSITA!**
 - ❑ **~50% have opt/IR counterparts with mag <21**
 - ❑ **SDSS-V is obtaining opt & IR spectroscopy North & South**
- ❑ **CXC serves SDSS-V data products (spectral properties and links to flux-calibrated digital spectra) to the community (unfunded)**

CSC2.1 Opt/IR Counterparts: Targets for SDSS-V Spectroscopy

- Re-ran with CSC2.1
- We only include for matching the following magnitude ranges
 - Gaia $14 < G < 20$
 - Legacy $14 < (g \mid r \mid z) < 21.5$
 - PanSTARRS $14 < (g \mid\mid r \mid\mid i \mid\mid z) < 21.5$
 - 2MASS $H \leq 14$
- 188k total candidate targets: 172k optical; 16k IR *only*
- Include a priority Pri, derived solely from the X-ray S/N
- Targeting simulations say expect ~40k spectra (cf.~ 300k eROSITA)
- ~16k SDSS-V spectra to date
- 5577 have NSPECOBS>1

CSC Counterpart Targets with SDSS-V Spectroscopy



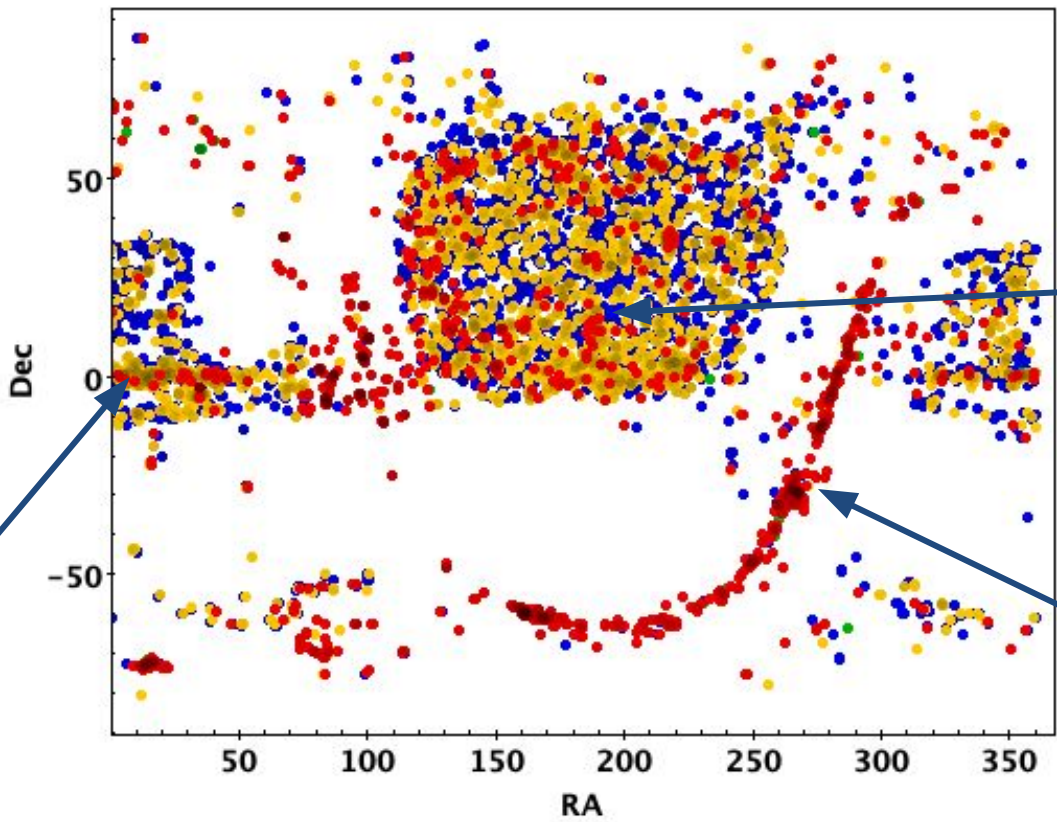
**Virgo
Cluster**

CSC2.1
Matched (3") spAll-v6_1_3
16,325 spectra 6/2020 - 7/2024

Galactic Center

**Equator;
Stripe82**

All SDSS/CSC Spectroscopy < Fall 2024 (includes SDSS DR17)



- AGN
- CV
- GALAXY
- STAR

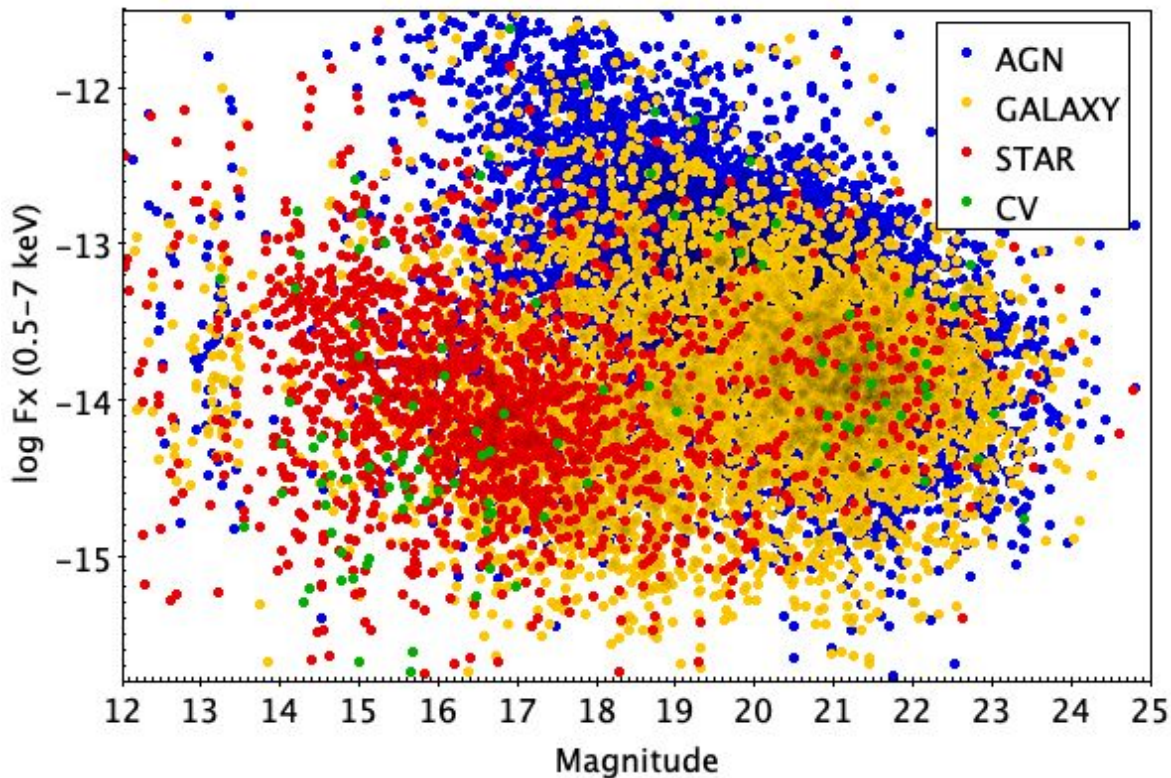
Virgo Cluster

24484 objects

Galactic Center

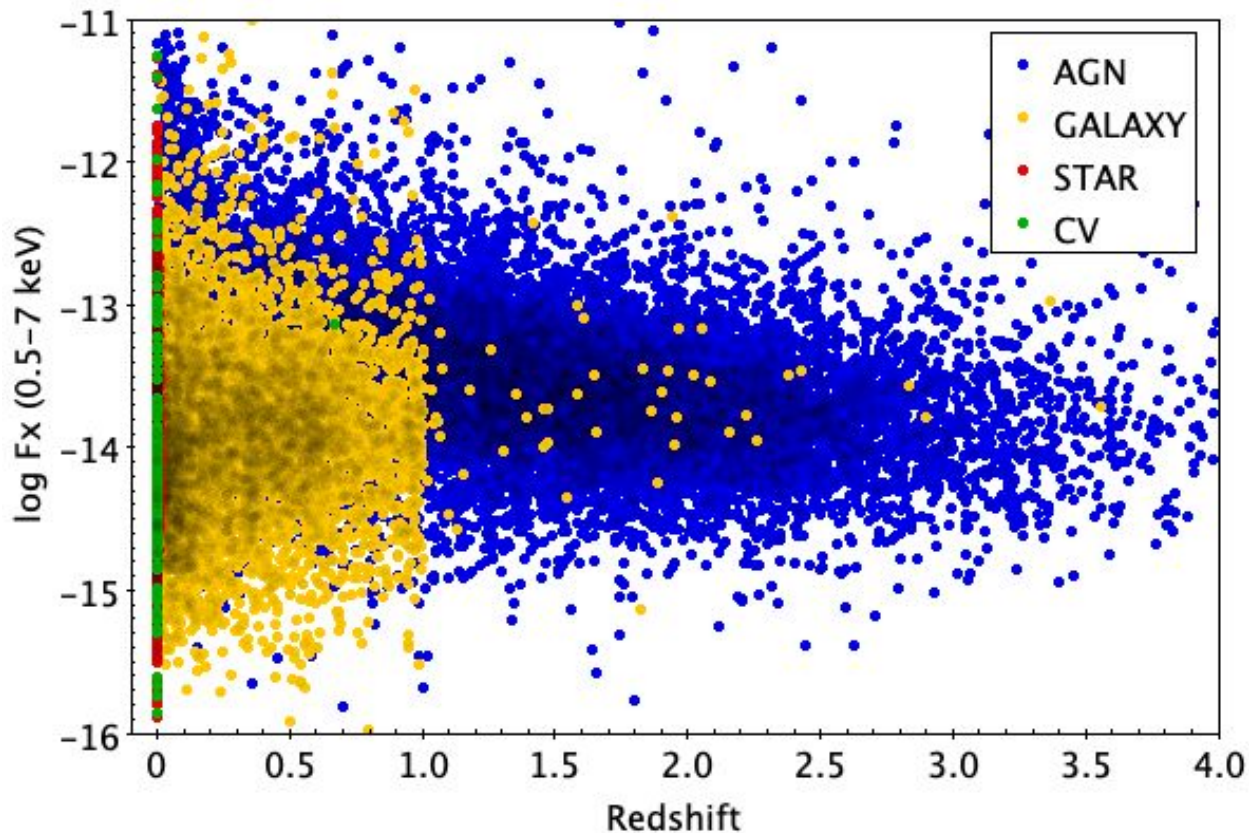
Equator;
Stripe82

X-ray Flux vs Optical Mag with SDSS DR17 + SDSS-V Classifications



17194 AGN
5488 GALAXY
1691 STAR
111 CVs
24484 Total

X-ray Flux vs Redshift with SDSS DR17 + SDSS-V Classifications



17194 AGN
5488 GALAXY
1691 STAR
111 CVs
24484 Total

CSC 2 Crossmatches

Public Matched Catalog Posted Live

Introduction

This page contains links and short descriptions of the tables of crossmatches between versions of the *Chandra* Source Catalog 2 and catalogs of sources from several multi-wavelength surveys. All crossmatches have been performed with a Bayesian method developed by [Budavari & Szalay \(2008\)](#) as implemented and extended by either [A. Rots \(2020\)](#) in the *Xmatch* code that takes into account local source density as well as both error ellipses and raw-size ellipses of the sources or the *NWAY* code ([Salvato et al 2018](#)).

CSC 2.0 sources are extracted from the [CSC 2.0 Master Sources table](#). For each crossmatched source pair the match type (E when positional error ellipse is used, R if source raw size is used) and match grade (D for definite matches, L for likely matches) are provided. Details on these columns can be found [here](#). In addition, ambiguous matches are provided in separate tables.

SDSS

PRELIMINARY CSC 2.1 Production Current Database Crossmatches with SDSS Spectra

Using the *NWAY* algorithm, we have crossmatched 188k sources from the [CSC 2.1](#) production current database on 14 November 2022 (389k sources) to four catalogs—[Gaia DR3](#), [Legacy Survey DR17](#), [SDSS DR17](#), and [SDSS DR17](#)—finding counterparts for 229k CSC 2.1 production current database sources. Cross-matching this table with SDSS DR17 spectroscopy provides a catalog of SDSS spectra, including pipeline classifications and radial velocities. The resulting catalog lists a subset of X-ray information for these sources, including positions and magnitudes for all optical/IR matches. We present a [README](#) file describing the catalog, and the cross-match catalog itself.



Note

Because this cross-match is performed using the preliminary CSC 2.1 production current database while processing continues, the user should be aware that a few percent of the matches may be wrong, have incorrect positions and/or position errors, or may be rejected entirely by catalog quality assurance when the final CSC 2.1 catalog is released.

A crossmatched table of 188k sources has been submitted to the SDSS-V project as potential targets for spectroscopy. Those that are observed will be matched to upcoming CSC 2.1 sources after the SDSS-V spectral data become public.

Will update Matched Catalog from 17k to 24k

NASA Hubble Fellowship Program

- 2024 Selection Review (virtual) Jan 16-23, 2024
- Stats: oversubscription up to ~22

Year Applicants 24Fellows Panelists

	N	%F	%F	N	%F
2024	521	34%	25%*	55	40%
2023	457	36%	54%	54	54%
2022	446	33%	29%	56	45%
2021	406	36%	58%	50	52%
2020	380	33%	54%	50	44%
2019	383	31%	42%	50	44%
2018	350	29%	38%	50	42%

*4 women, 1 man declined

Application Numbers by Panel

<u>Panel</u>	<u># Appl</u>	<u>Teflons</u>	<u>Discuss</u>	<u>Shortlist</u>
Compact Obj/Accretion	111	2	31	7
External Galaxies/IGM	107	2	32	7
Physics & Cosmology	79	2	31	5
Exoplanets	74	1	33	6
Planet Formation/Disks	52	1	32	4
Stellar Physics	51	1	31	3
MW/Stellar Populations	47	1	30	3
Overall	521	10	220	35

Teflons ~2%, Shortlist ~6.7% of #Applications

NHFP News

- New funding available for mentoring/outreach
 - Mentoring/collaboration workshops, 1st at 2024 Symposium
 - Up to \$250k for FY25; implementing student funding program
- NASA Ames, Goddard (Marshall TBD) now able to host NHFPs
- U.S. territories as well e.g., Puerto Rico, USVI, Guam
- Investigating US overseas institutions e.g., NYU Abu Dhabi

NASA Hubble Fellowship Program



2024 Symposium

September 16-20, 2024

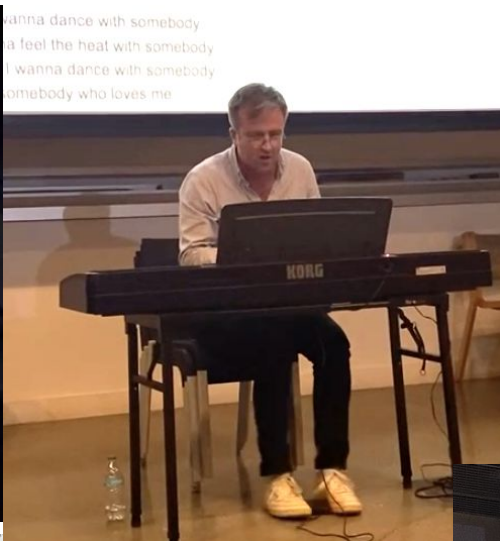
Hosted by the NASA Exoplanet Science Institute
California Institute of Technology, Pasadena, CA



- Sep 16-20 in Pasadena, CA
- Non-science sessions
 - Mentoring/Collaboration
 - Grants & Benefits
 - Faculty Application Panel
 - JPL tour
 - Open Mic
- Slides and videos posted at <https://nexsci.caltech.edu/conferences/2024/nhfp>



**Caltech
Cahill Center**



NHFP Non-Science Highlights

