The HEASARC Framework

Tecniche e strumenti di analisi dati per sorgenti astrofisiche e polarimetria nei raggi X

Dipartimento di Fisica - UniTo

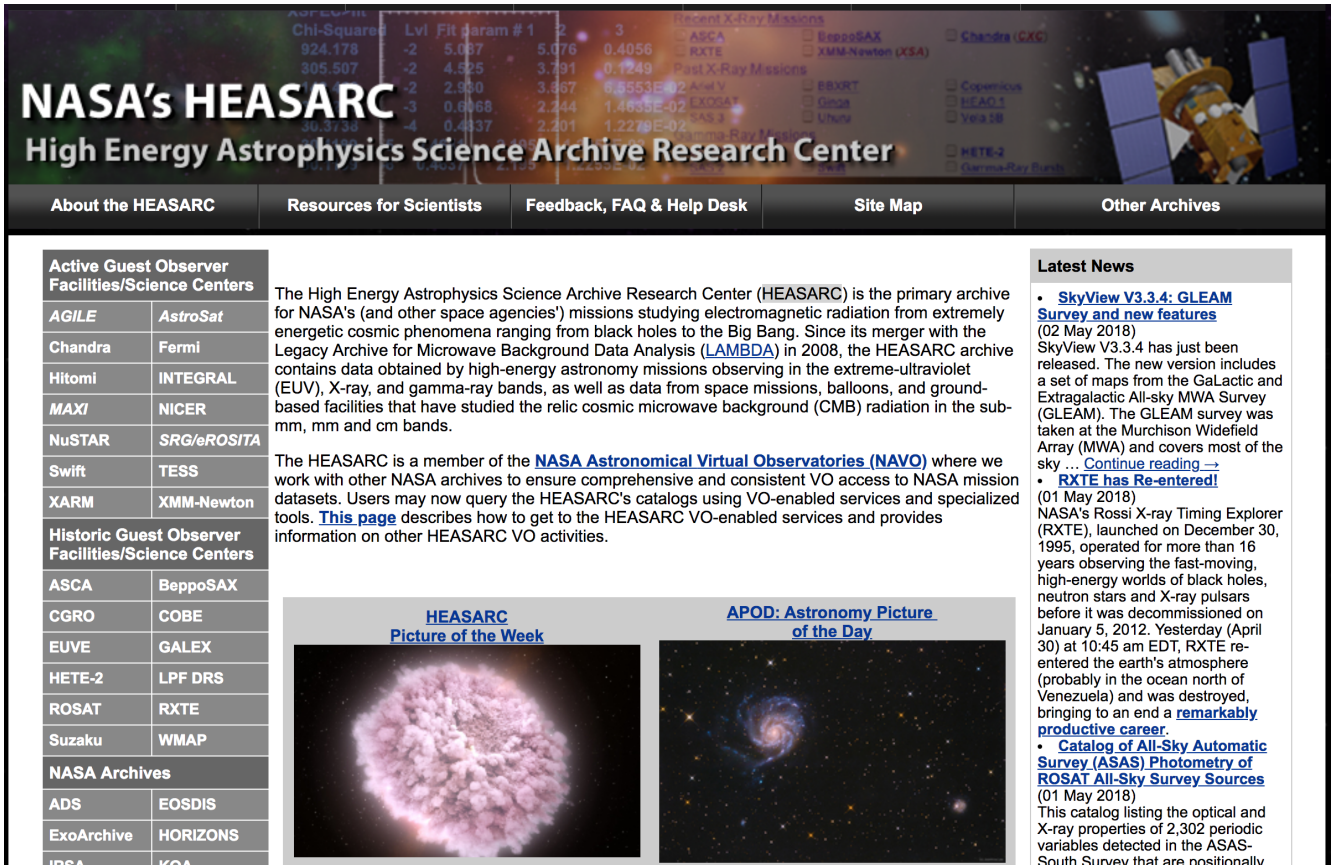
Martedì 08/05/2018

HEASARC Archive

- The High Energy Astrophysics Science Archive Research Center (HEASARC) is the primary archive for NASA's (and other space agencies') high-energy missions.
- The HEASARC archive contains data obtained by high-energy astronomy missions (EUV, X-ray, gamma-ray), as well as data from CMB facilities since its merger with the Legacy Archive for Microwave Background Data Analysis (LAMBDA) in 2008.
- The HEASARC is a member of the NASA Astronomical Virtual Observatories (VO), "the vision that astronomical datasets and other resources should work as a seamless whole".

HEASARC Archive

https://heasarc.gsfc.nasa.gov/



HEASARC Observatories

ACTIVE MISSIONS	
AGILE	
AstroSat	
Chandra	
Fermi	
Hitomi	
INTEGRAL	
MAXI	
NICER	
NuSTAR	
Swift	
XMM-Newton	
PAST MISSIONS	
ANS	ARIEL V
ASCA	BBXRT
BeppoSAX	CGRO
COPERNICUS	COS-B
DXS	EINSTEIN
EUVE	EXOSAT
GINGA	GRANAT
HAKUCHO	HEAO-1
HEAO-3	HETE-2
OSO-7	OSO-8
ROSAT	Rossi XTE
SAS-2	SAS-3
Suzaku	TENMA
UHURU	VELA 5B

High Energy Astrophysics Observatories

These Web pages describe all the high energy astronomy observatories, or "missions," ever launched, excluding those solely dedicated to observing the Sun. If on the other hand you are interested in cosmic microwave background experiments, please check out this extensive **list on the LAMBDA web site**.

The links to the left in the menu-bar are dedicated to the most notable past and present X-ray and gamma-ray astronomy missions. The pages for each mission include:

- a mission overview,
- technical information on the instrumentation,
- a bibliography and
- a gallery of images.

They also contain a description of the available data if they are present in the HEASARC archive. Information on other satellites carrying either an X-ray or a gamma-ray telescope is available on the All Missions pages.

Latest News

- NICER was launched on a SpaceX Dragon rocket on June 3, 2017 as part of a resupply mission to the ISS

More News

Spacecraft Image of the Week

[an error occurred while processing this directive]

Other Resources

- All Missions (info & images)
- All Missions by Time
- All Missions by Energy
- Comparison of Mission Capabilities
- Concepts for Future Missions
- Images, Spectra, and Light Curves

High energy astrophysics is a young discipline, whose history is only a few decades old, and requires space-borne instruments to observe the X-ray and gamma-ray sky.

X-ray Observatories

After the rocket experiments during the 1960s, the first X-ray Earth-orbiting explorers were launched in the 1970s (*Uhuru*, SAS 3, Ariel5) followed in late 1970s early 1980s by larger missions (HEAO-1, *Einstein,* EXOSAT, and Ginga). Their scientific outcome, in particular the first X-ray images taken by *Einstein,* lifted X-ray astronomy into the mainstream of astronomical research. It is now known that nearly every astronomical object from nearby comets to distant quasars emits X-rays. In the 1990s the ROSAT survey detected more than 100,000 X-ray objects, the ASCA mission made the first sensitive measurements of the X-ray spectra from these objects, and RXTE studied their timing properties. The late 1990's launch of the Chandra and XMM-Newton observatories brought high-resolution imaging and high-throughput capability to X-ray astronomy. These missions, combined with Suzaku/Astro-E2, launched in 2005, have opened new and exciting horizons in the journey of the X-ray astronomy

Gamma-Ray Observatories

SAS 2 and Cos B, launched in the 1970s, made the first surveys of the gamma-ray sky, followed by the Compton Gamma-ray Observatory in 1990 and more recently by INTEGRAL in 2002. Blazars, pulsars, and many unidentified sources in our galaxy are the gamma-ray emitters. Fermi (formerly GLAST), the latest gamma-ray observatory, is expected to resolve the diffuse emission and make an all-sky survey with higher angular and energy resolution. The mysterious gamma-ray bursts (GRBs) discovered in the late 1960s by the Vela satellite, were shown to be the most powerful explosions in the Universe and isotropically distributed, thanks to the rapid response capability of BeppoSAX and the all-sky monitoring of CGRO. Swift, launched in November 2004, is providing data on the GRBs prompt emission and their afterglows to allow the most comprehensive study on GRBs and determine their origin.

HEASARC Online Tools

General Tools

- Bibliography – Bibliographic references to HEASARC services and missions
- Coordinate Converter – CoCo: Object location and coordinate converter
- Energy Converter – Energy/frequency/wavelength converter
- FITS File Verifier – Run fverify on any of your own FITS files
- nH Column Density – Determine neutral Hydrogen column density by target coordinates
- Time/Date Converter (xTime) – Convert between Julian date formats and standard date formats such as YYYY-MM-DD
- Universal Atomic Database – Find atomic physics quantities needed for astrophysical research
- X-Ray Background – Calculate average X-ray background count rates from the ROSAT All-Sky Survey diffuse background maps
- X-Ray, Gamma-Ray, and EUV Source Finder – Is my favorite object a high-energy source?

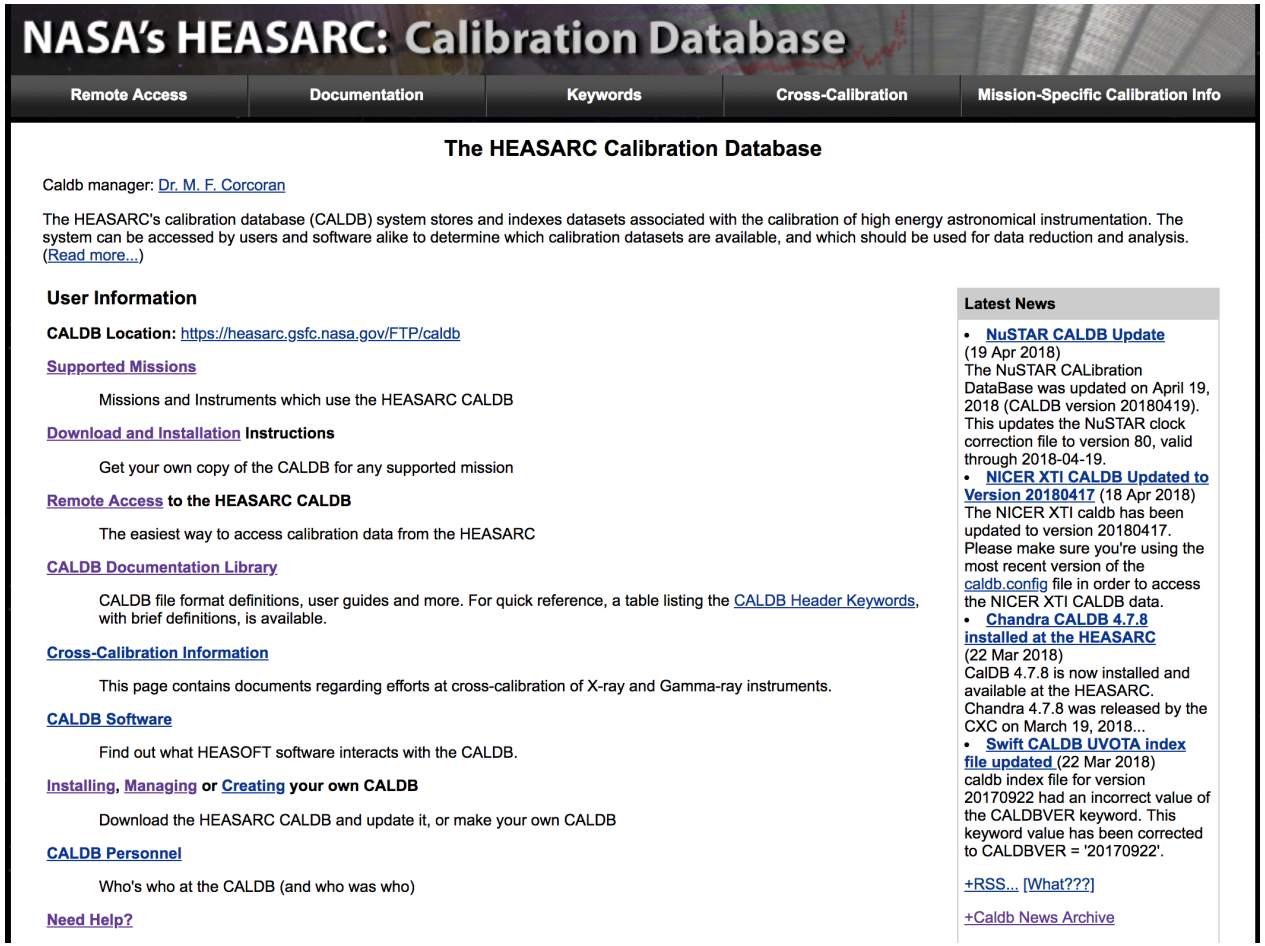
Multi-Mission Tools

- Hera – Astronomical data analysis over the Internet
- RPS – Remote Proposal System
- Date/Time Converter (xTime) – Convert Fermi, RXTE, Suzaku, Swift, and XMM-Newton times to other time systems and formats, and vice versa
- *SkyView* – The Internet's Virtual Telescope
- Timeline Tool – Swift, RXTE and HETE-2 observation (as-flown) timelines
- Viewing – Determine possible viewing times for missions and objects
- WebPIMMS – Determine source flux or count rates
- WebSpec – Simulate spectral data for missions/instruments

Cosmic Microwave Background Analysis Tools

- LAMBDA Toolbox – Useful tools for CMB and general astronomy

HEASARC Calibration



NASA's HEASARC: Calibration Database

Remote Access | Documentation | Keywords | Cross-Calibration | Mission-Specific Calibration Info

The HEASARC Calibration Database

Caldb manager: Dr. M. F. Corcoran

The HEASARC's calibration database (CALDB) system stores and indexes datasets associated with the calibration of high energy astronomical instrumentation. The system can be accessed by users and software alike to determine which calibration datasets are available, and which should be used for data reduction and analysis. (Read more...)

User Information

CALDB Location: https://heasarc.gsfc.nasa.gov/FTP/caldb

Supported Missions

Missions and Instruments which use the HEASARC CALDB

Download and Installation Instructions

Get your own copy of the CALDB for any supported mission

Remote Access to the HEASARC CALDB

The easiest way to access calibration data from the HEASARC

CALDB Documentation Library

CALDB file format definitions, user guides and more. For quick reference, a table listing the CALDB Header Keywords, with brief definitions, is available.

Cross-Calibration Information

This page contains documents regarding efforts at cross-calibration of X-ray and Gamma-ray instruments.

CALDB Software

Find out what HEASOFT software interacts with the CALDB.

Installing, Managing or Creating your own CALDB

Download the HEASARC CALDB and update it, or make your own CALDB

CALDB Personnel

Who's who at the CALDB (and who was who)

Need Help?

Latest News

- **NuSTAR CALDB Update** (19 Apr 2018)
  The NuSTAR CALibration DataBase was updated on April 19, 2018 (CALDB version 20180419). This updates the NuSTAR clock correction file to version 80, valid through 2018-04-19.
- **NICER XTI CALDB Updated to Version 20180417** (18 Apr 2018)
  The NICER XTI caldb has been updated to version 20180417. Please make sure you're using the most recent version of the caldb.config file in order to access the NICER XTI CALDB data.
- **Chandra CALDB 4.7.8 installed at the HEASARC** (22 Mar 2018)
  CalDB 4.7.8 is now installed and available at the HEASARC. Chandra 4.7.8 was released by the CXC on March 19, 2018...
- **Swift CALDB UVOTA index file updated** (22 Mar 2018)
  caldb index file for version 20170922 had an incorrect value of the CALDBVER keyword. This keyword value has been corrected to CALDBVER = '20170922'.

+RSS... [What???]

+Caldb News Archive

CALDB

- The HEASARC Calibration Database (CALDB) is a modular system for storing and retrieving calibration data on an instrument-by-instrument basis.
- It is designed to be flexible and installable on any Unix workstation, desktop or laptop.
- The CALDB is integrated with the HEAsoft software package in that the HEAsoft tasks can access appropriate calibration data from the CALDB with little input from the user.

HEASARC Data Access

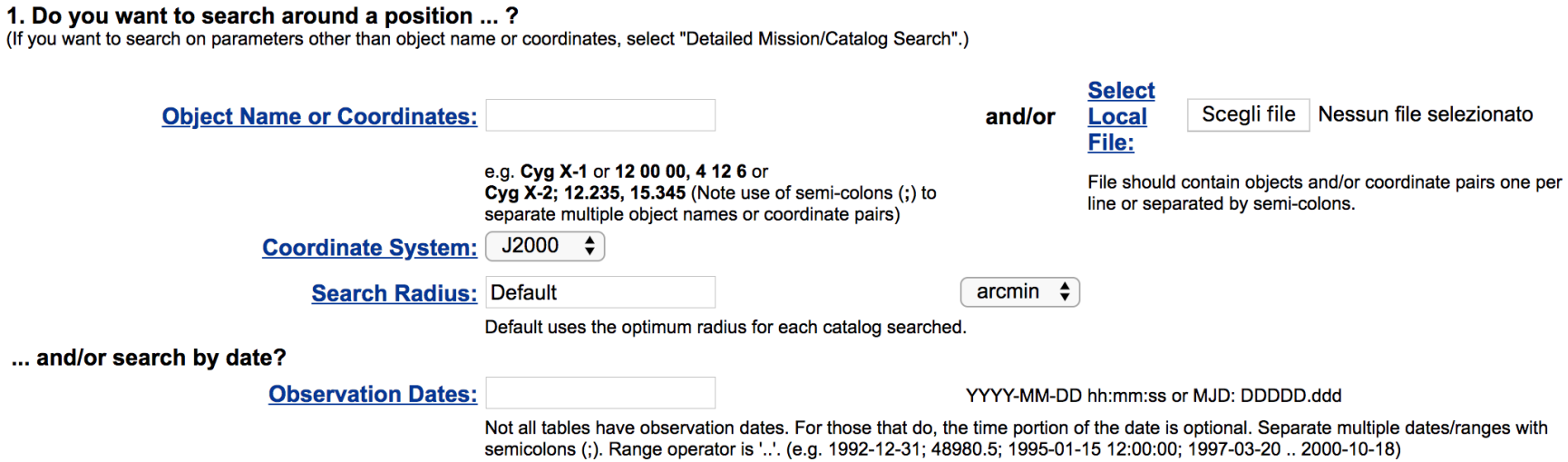
Traditional Browse Interfaces

- Browse Keyword Search: Search-Engine-like query using keywords
- Browse Table Index: List of all tables in the HEASARC database
- Browse Correlation: Cross-(anti)correlation of full tables (radius or time)
- Browse Mission Interface: Full-featured interface

Browse Mission Interface

Full-featured interactive search interface:

https://heasarc.gsfc.nasa.gov/cgi-bin/W3Browse/w3browse.pl



Browse Mission Interface 2

2. What missions and catalogs do you want to search? (Bold text indicates mission is active)

- Most Requested Missions
  - **Chandra** [*CXC*,*CSC*]
  - **Fermi**
  - **Hitomi**
  - **NICER**
  - **NuSTAR** [*CalTech*]
  - ROSAT
  - RXTE
  - **Suzaku**
  - **Swift**
  - **WMAP**
  - **XMM-Newton** [*XSA*]
- Other X-Ray and EUV Missions
  - Ariel V
  - ASCA
  - BBXRT/Astro-1
  - BeppoSAX
  - Copernicus
  - Einstein
  - EUVE [*MAST*]
  - EXOSAT
  - Ginga
  - HEAO 1
  - Kvant
  - **MAXI** [*JAXA*]
  - OSO8
  - SAS 3
  - Uhuru
  - Vela 5B
- Other Gamma-Ray Missions
  - **AGILE** [*ASDC*]
  - CGRO
  - COS B
  - HETE-2
  - **INTEGRAL** [*ISDA*,*ISDC*]
  - SAS 2
  - Gamma-Ray Bursts
  - **RHESSI**
- Missions and Facilities
  - AKARI (IR) [**Project**]
  - ANS (UV)
  - COBE (IR/sub-mm) [*LAMBDA*]
  - **CoRoT** (Opt) [*CNES*]
  - FAUST/Atlas-1 (UV)
  - FUSE (UV) [*MAST*]
  - GALEX (UV) [*MAST*]
  - **Ground-Based** (Opt-Radio)
  - **Herschel** (IR-submm) [*ESA*]
  - **HST** (UV-NearIR) [*MAST*]
  - IRAS (IR)
  - ISO (IR) [*IDA*]
  - IUE (UV) [*MAST*]
  - **LPF** [*ESA*]
  - MSX (UV-IR)
  - **Planck** (submm-radio) [*ESA*,*IRSA*]
  - **SDSS** (Opt) [**Project**]
  - **Spitzer** (IR) [*SSC*]
  - TD1 (UV)
  - UIT/Astro-1 (UV) [*MAST*]
  - **WISE** (IR) [*IRSA*]
- Popular Catalog Choices
  - Hipparcos Main
  - HST Guide Stars 2.3.2
  - NGC 2000
  - USNO B1
  - 2MASS
  - ROSAT All-Sky Survey
  - ROSAT Pointed Source Catalogs
  - CGRO BATSE GRB Catalog
  - Veron Quasars/AGN
  - All VizieR Catalogs
  - 3XMM-DR4 Serendipitous Source Catalog
- Multiwavelength Catalogs
  - Galaxies
  - Master
  - Nebulae
  - General
  - Stars
  - Radio

Browse Mission Interface 3

3. What types of information do you want to search for?

- [x] Archived data and observations
- [x] Object catalogs
- [x] Proposals, abstracts, and schedules
- [ ] CDS VizieR catalogs (query VizieR catalogs relevant to missions or catalogs selected above)

4. Do you want to modify the defaults for number of results and their display?

Limit Results To: 1000 rows

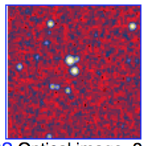
Output Format: Tabbed Display Note: FITS format requires FITS software (such as fv) to examine the results.

Show All Parameters: Select to display all catalog parameters instead of only defaults

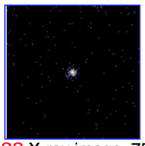
Search Example

Query Information | Query Results | Data Products Retrieval | Help

Images generated by *SkyView*
Click on image to see full *SkyView* image



DSS Optical image, 2.83'



RASS X-ray image, 75.0'

Images centered on requested position

Search was based on:

Object/Coordinates: 3c454.3
resolved by SIMBAD (local cache) to [22 53 57.75, +16 08 53.6]
Using the coordinates from the SIMBAD resolver for 3c454.3.
Coord. System: Equatorial, equinox 2000
Maximum Rows: 1000
Search Radius: Default arc minutes
Reissue Query | Save Query To File

Redisplay as HTML Table
Printer-Friendly Version
Save All Objects To File
Ripristina

Browse Tip: Do you know how to estimate the number of random matches in a cross-correlation? Learn more on this topic or See all tips

Table Name/Row Count Summary: 19 tables queried. A total of 4503 rows returned.

Click on table name to view search results

swiftmastr:Swift Master Catalog	465	**swiftgrb**:Swift Gamma Ray Bursts Catalog	0
swsdssqso:Swift Simultaneous UV, Optical, and X-Ray Observed Quasar Catalog	0	**swiftuvlog**:Swift UVOT Instrument Log	1000
swbatagn60:Swift BAT 60-Month Survey of Active Galactic Nuclei Catalog	1	**swxcscat**:Swift X-Ray Telescope Cluster Survey Catalog	0
swifttdrss:Swift TDRSS Messages	0	**swiftxrlog**:Swift XRT Instrument Log	1000
swxcsoxid:Swift X-Ray Telescope Cluster Survey Cross-Correlation Catalog	0	**sacshpscat**:Swift AGN & Cluster Survey (SACS) Hard-Band (2-10 keV) Point Source Catalog	0
sacstpscat:Swift AGN & Cluster Survey (SACS) Total-Band (0.2-10 keV) Point Source Catalog	0	**sacsspscat**:Swift AGN & Cluster Survey (SACS) Soft-Band (0.5-2 keV) Point Source Catalog	0
swxrt1fgl:Swift XRT Counterparts to Unidentified 1FGL Sources	0	**swbatsfxt**:Swift BAT 100-Month Supergiant Fast X-Ray Transient Catalog	0
sixsrvycat:Swift-INTEGRAL X-Ray (SIX) Survey Catalog	0	**swuvotssob**:Swift/UVOT Serendipitous Source Catalog, v1.1: Observations IDs	37
sacssescat:Swift AGN & Cluster Survey (SACS) Soft-Band (0.5-2 keV) Extended Source Catalog	0	**swuvotssc**:Swift/UVOT Serendipitous Source Catalog, v1.1	1000
swiftbalog:Swift BAT Instrument Log	1000		

Swift Master Catalog

O: DSS, R: RASS, N: NED, S: SIMBAD, D: DATA, B: ADS

Query Information | Query Results | Data Products Retrieval | Help

swift

swiftmastr | swiftuvlog | swbatagn60 | swiftxrlog | swuvotssob | swuvotssc | swiftbalog

Click mission tabs (middle tab level) to display table tabs. Move cursor over tabs to see more information.

Table Legend:
Display all parameters for a row
Sort by a column in order: 1,2,3 Sort by column in reverse order: 3,2,1 /Current table sort
Services links: O: Digitized Sky Survey image, R: ROSAT All-Sky Survey image, N: NED objects near coordinates,
S: SIMBAD objects near coordinates, D: get list of data products, B: ADS bibliography holdings, G: GRB Coordinate Network (GCN) notices, F: FOV plot for observation

Data Products: Click checkbox to add row to Data Product Retrieval List

Swift Master Catalog (swiftmastr) Bulletin
Search radius used: 25.00 '

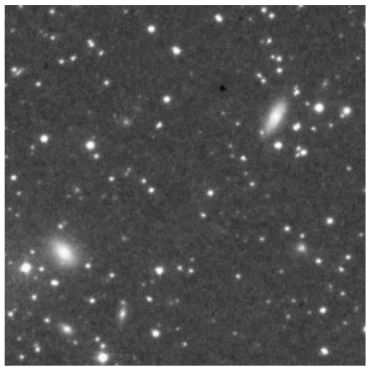
Select All	Related Links	Services	name	obsid	ra	dec	start time	processing date	xrt exposure [s]	uvot exposure [s]	bat exposure [s]	archive date	Search Offset ['] from (target)
	BAT UVOT XRT	O R N S D B	3C454.3	00035030001	22 53 58.11	+16 09 17.5	2005-04-24 19:20:02	2014-10-18	14352.15800	11230.12200	15001.00000	2005-05-05	0.409 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493025	22 53 43.61	+16 07 44.0	2013-09-26 03:54:56	2017-11-22	9850.79700	9729.97600	9890.00000	2013-10-07	3.588 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493016	22 53 55.71	+16 10 33.2	2012-12-27 03:25:59	2017-06-30	7128.02600	7075.65500	0.00000	2013-01-07	1.730 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493022	22 54 15.81	+16 07 41.7	2013-07-28 08:22:59	2017-11-18	6933.31200	6904.12800	6967.00000	2013-08-08	4.500 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493028	22 53 47.93	+16 07 23.6	2013-10-27 06:28:59	2017-12-02	6910.47600	6882.24600	6966.00000	2013-11-07	2.794 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493015	22 53 52.56	+16 09 33.8	2012-11-27 00:24:59	2017-06-29	6843.26600	6817.80300	6875.00000	2012-12-08	1.416 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018010	22 53 49.60	+16 09 02.4	2013-11-14 00:12:59	2017-12-03	6812.81700	6686.92000	6850.00000	2013-11-25	1.962 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018011	22 53 51.92	+16 09 38.1	2013-12-14 03:52:59	2017-12-04	6698.17400	6547.02100	6737.00000	2013-12-25	1.585 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018014	22 54 07.21	+16 08 34.3	2014-05-14 02:04:57	2014-05-24	6340.02200	6159.30400	6388.00000	2014-05-25	2.295 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018031	22 53 58.93	+16 08 50.2	2014-08-14 09:05:59	2014-08-24	5661.43100	5560.65800	5689.00000	2014-08-25	0.289 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018032	22 53 43.65	+16 06 58.3	2014-09-13 18:21:58	2014-09-23	5594.13200	5503.08600	5622.00000	2014-09-24	3.893 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031493019	22 54 01.84	+16 08 07.9	2013-05-27 12:51:58	2017-11-11	5489.44900	5464.30700	5518.00000	2013-06-07	1.244 (3c454.3)
	BAT UVOT XRT	O R N S D B	3C454.3	00031018012	22 53 52.57	+16 12 55.5	2014-01-14 10:43:58	2014-01-24	5385.27600	5286.37900	5414.00000	2014-01-25	4.220 (3c454.3)

DSS

SkyView
The Internet's Virtual Telescope
Home Query Form Help

***SkyView* Images**

Digitized Sky Survey: Original Digitized Sky Survey



Download FITS or quick look jpeg image. Add to Gallery [What is this?]
Links to mosaic inputs

Image color table:
Image scaling: Log, values range from 1699.0 to 12696.0
Image size(degrees): 0.14166666 x 0.14166666
Image size(pixels): 300 x 300
Requested Center: 35.67876666,+43.03824225
Requested Center: 35.67876666, 43.03824225
Coordinate System: J2000.0
Map projection: Tan
Sampler: NNSampler
Provenance: Data taken by ROE and AAO, CalTech, Compression and distribution by Space Telescope Science Institute.
Copyright: STScI, ROE, AAO, UK-PPARC, CalTech, National Geographic Society.
Full copyright notice

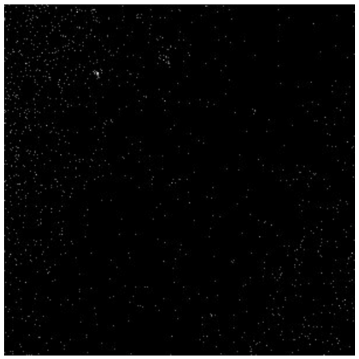
More information

RASS

SkyView
The Internet's Virtual Telescope
Home Query Form Help

***SkyView* Images**

RASS-Cnt Broad: ROSAT All-Sky X-ray Survey Broad Band: Counts

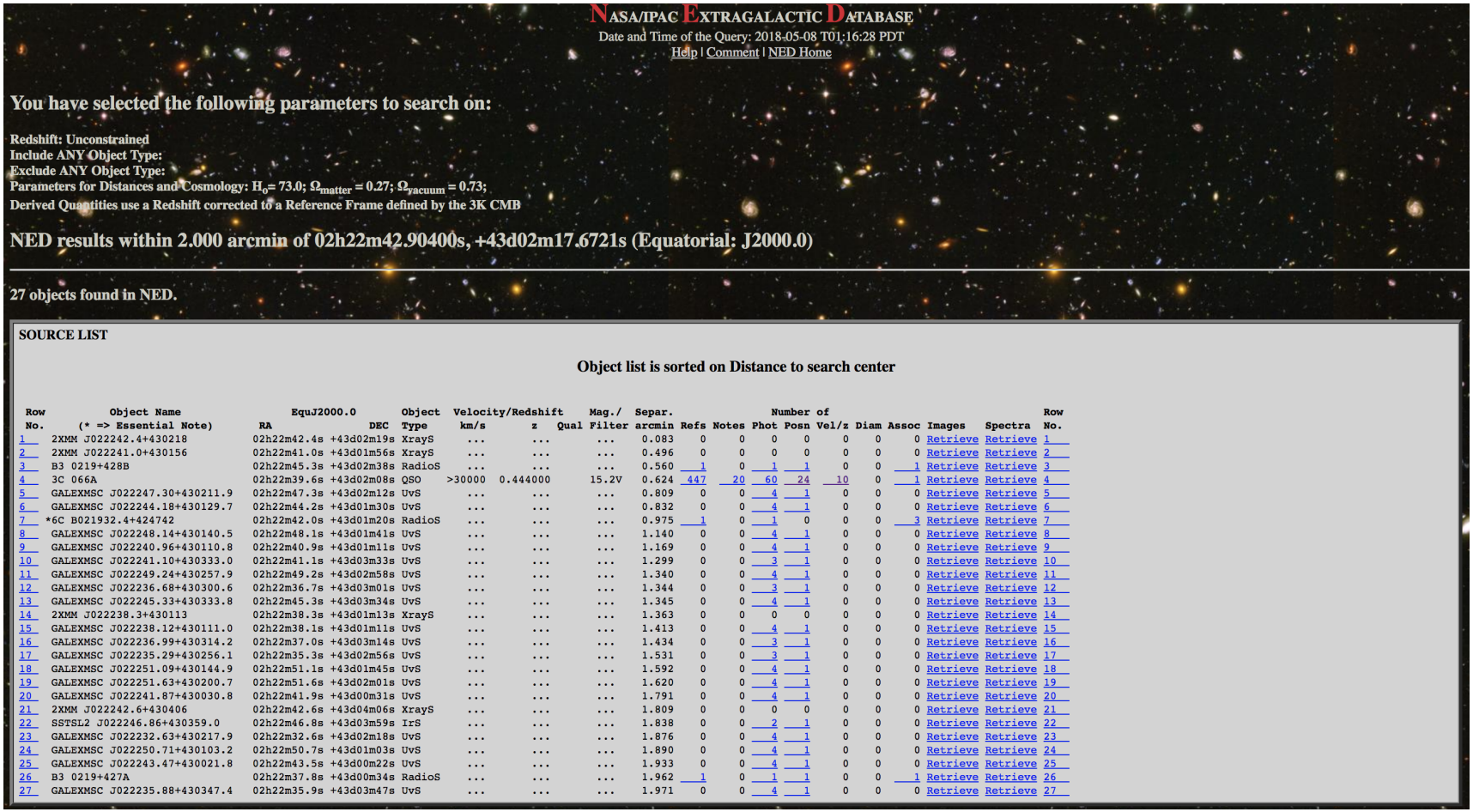


Download FITS or quick look jpeg image. Add to Gallery [What is this?]
Links to mosaic inputs

Image color table:
Image scaling: Log, values range from 0.0 to 6.0
Image size(degrees): 3.75000006 x 3.75000006
Image size(pixels): 300 x 300
Requested Center: 35.67876666,+43.03824225
Requested Center: 35.67876666, 43.03824225
Coordinate System: J2000.0
Map projection: Tan
Sampler: NNSampler
Provenance: Max Planck Institute for Exterrestrial Physics (Garching FRG)
Copyright: MPE but data may be used for scientific purposes so long as appropriate reference is included.
More information

Associated maps for Counts band images:
Flux map.

NED



NASA/IPAC EXTRAGALACTIC DATABASE

Date and Time of the Query: 2018-05-08 T01:16:28 PDT

Help | Comment | NED Home

You have selected the following parameters to search on:

Redshift: Unconstrained
Include ANY Object Type:
Exclude ANY Object Type:
Parameters for Distances and Cosmology: H_o= 73.0; Ω_{matter} = 0.27; Ω_{vacuum} = 0.73;
Derived Quantities use a Redshift corrected to a Reference Frame defined by the 3K CMB

NED results within 2.000 arcmin of 02h22m42.90400s, +43d02m17.6721s (Equatorial: J2000.0)

27 objects found in NED.

SOURCE LIST

Object list is sorted on Distance to search center

Row No.	Object Name (* => Essential Note)	EquJ2000.0 RA	EquJ2000.0 DEC	Object Type	Velocity/Redshift km/s	Velocity/Redshift z	Mag./ Qual	Mag./ Filter	Separ. arcmin	Number of Refs	Number of Notes	Number of Phot	Number of Posn	Number of Vel/z	Number of Diam	Number of Assoc	Images	Spectra	Row No.
1	2XMM J022242.4+430218	02h22m42.4s	+43d02m19s	XrayS	...	...	...	...	0.083	0	0	0	0	0	0	0	Retrieve	Retrieve	1
2	2XMM J022241.0+430156	02h22m41.0s	+43d01m56s	XrayS	...	...	...	...	0.496	0	0	0	0	0	0	0	Retrieve	Retrieve	2
3	B3 0219+428B	02h22m45.3s	+43d02m38s	RadioS	...	...	...	...	0.560	1	0	1	1	0	0	1	Retrieve	Retrieve	3
4	3C 066A	02h22m39.6s	+43d02m08s	QSO	>30000	0.444000	15.2V		0.624	447	20	60	24	10	0	1	Retrieve	Retrieve	4
5	GALEXMSC J022247.30+430211.9	02h22m47.3s	+43d02m12s	UvS	...	...	...	...	0.809	0	0	4	1	0	0	0	Retrieve	Retrieve	5
6	GALEXMSC J022244.18+430129.7	02h22m44.2s	+43d01m30s	UvS	...	...	...	...	0.832	0	0	4	1	0	0	0	Retrieve	Retrieve	6
7	*6C B021932.4+424742	02h22m42.0s	+43d01m20s	RadioS	...	...	...	...	0.975	1	0	1	0	0	0	3	Retrieve	Retrieve	7
8	GALEXMSC J022248.14+430140.5	02h22m48.1s	+43d01m41s	UvS	...	...	...	...	1.140	0	0	4	1	0	0	0	Retrieve	Retrieve	8
9	GALEXMSC J022240.96+430110.8	02h22m40.9s	+43d01m11s	UvS	...	...	...	...	1.169	0	0	4	1	0	0	0	Retrieve	Retrieve	9
10	GALEXMSC J022241.10+430333.0	02h22m41.1s	+43d03m33s	UvS	...	...	...	...	1.299	0	0	3	1	0	0	0	Retrieve	Retrieve	10
11	GALEXMSC J022249.24+430257.9	02h22m49.2s	+43d02m58s	UvS	...	...	...	...	1.340	0	0	4	1	0	0	0	Retrieve	Retrieve	11
12	GALEXMSC J022236.68+430300.6	02h22m36.7s	+43d03m01s	UvS	...	...	...	...	1.344	0	0	3	1	0	0	0	Retrieve	Retrieve	12
13	GALEXMSC J022245.33+430333.8	02h22m45.3s	+43d03m34s	UvS	...	...	...	...	1.345	0	0	4	1	0	0	0	Retrieve	Retrieve	13
14	2XMM J022238.3+430113	02h22m38.3s	+43d01m13s	XrayS	...	...	...	...	1.363	0	0	0	0	0	0	0	Retrieve	Retrieve	14
15	GALEXMSC J022238.12+430111.0	02h22m38.1s	+43d01m11s	UvS	...	...	...	...	1.413	0	0	4	1	0	0	0	Retrieve	Retrieve	15
16	GALEXMSC J022236.99+430314.2	02h22m37.0s	+43d03m14s	UvS	...	...	...	...	1.434	0	0	3	1	0	0	0	Retrieve	Retrieve	16
17	GALEXMSC J022235.29+430256.1	02h22m35.3s	+43d02m56s	UvS	...	...	...	...	1.531	0	0	3	1	0	0	0	Retrieve	Retrieve	17
18	GALEXMSC J022251.09+430144.9	02h22m51.1s	+43d01m45s	UvS	...	...	...	...	1.592	0	0	4	1	0	0	0	Retrieve	Retrieve	18
19	GALEXMSC J022251.63+430200.7	02h22m51.6s	+43d02m01s	UvS	...	...	...	...	1.620	0	0	4	1	0	0	0	Retrieve	Retrieve	19
20	GALEXMSC J022241.87+430030.8	02h22m41.9s	+43d00m31s	UvS	...	...	...	...	1.791	0	0	4	1	0	0	0	Retrieve	Retrieve	20
21	2XMM J022242.6+430406	02h22m42.6s	+43d04m06s	XrayS	...	...	...	...	1.809	0	0	0	0	0	0	0	Retrieve	Retrieve	21
22	SSTSL2 J022246.86+430359.0	02h22m46.8s	+43d03m59s	IrS	...	...	...	...	1.838	0	0	2	1	0	0	0	Retrieve	Retrieve	22
23	GALEXMSC J022232.63+430217.9	02h22m32.6s	+43d02m18s	UvS	...	...	...	...	1.876	0	0	4	1	0	0	0	Retrieve	Retrieve	23
24	GALEXMSC J022250.71+430103.2	02h22m50.7s	+43d01m03s	UvS	...	...	...	...	1.890	0	0	4	1	0	0	0	Retrieve	Retrieve	24
25	GALEXMSC J022243.47+430021.8	02h22m43.5s	+43d00m22s	UvS	...	...	...	...	1.933	0	0	4	1	0	0	0	Retrieve	Retrieve	25
26	B3 0219+427A	02h22m37.8s	+43d00m34s	RadioS	...	...	...	...	1.962	1	0	1	1	0	0	1	Retrieve	Retrieve	26
27	GALEXMSC J022235.88+430347.4	02h22m35.9s	+43d03m47s	UvS	...	...	...	...	1.971	0	0	4	1	0	0	0	Retrieve	Retrieve	27

SIMBAD

Set of Identifications, Measurements and Bibliography for Astronomical Data.

other query modes : Identifier query | Coordinate query | Criteria query | Reference query | Basic query | Script submission | TAP | Output options | Help

C.D.S. - SIMBAD4 rel 1.6 - 2018.05.08EDT04:23:36

Available data : Basic data • Identifiers • Plot & images • Bibliography • Measurements • External archives • Notes • Annotations

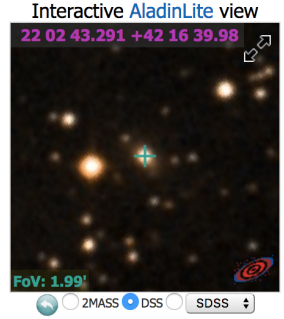
Basic data :

NAME BL Lac -- BL Lac - type object

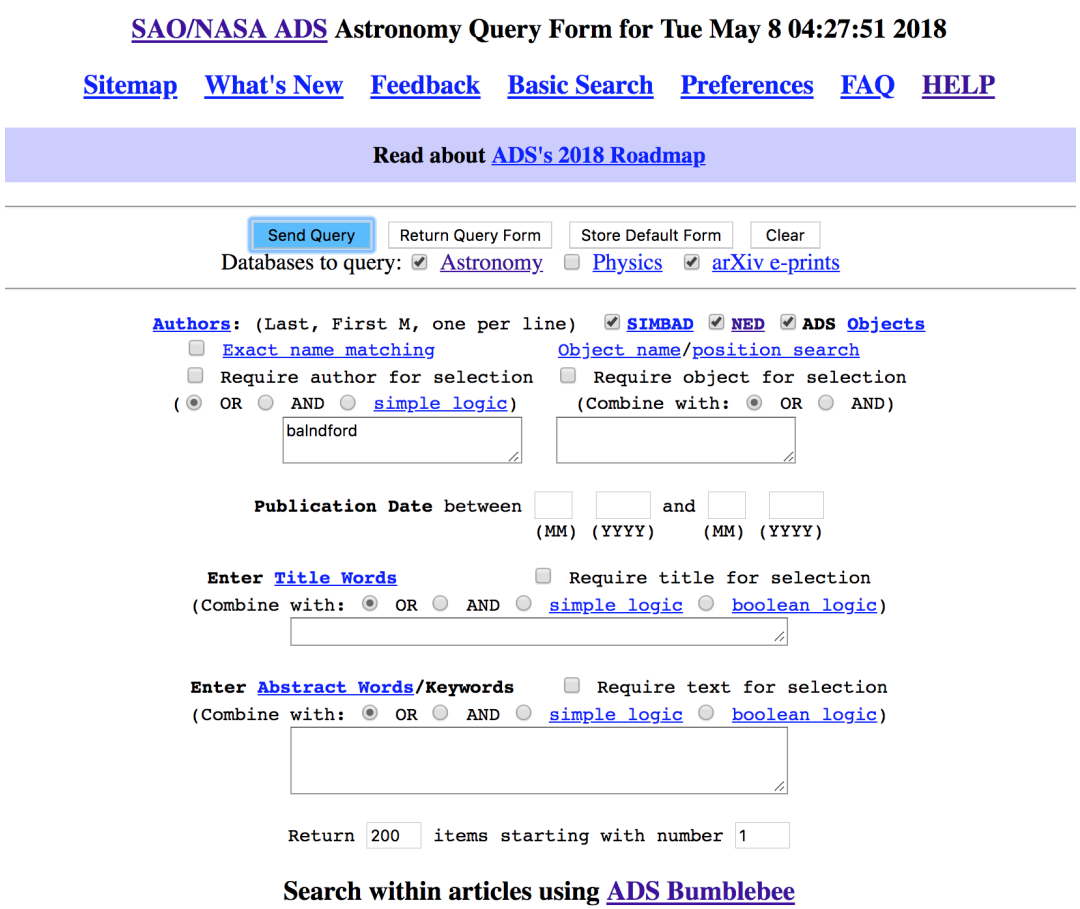
Other object types:	**Rad** (Ref,B3,...), **X** (Ref,1AXG,...), **gam** (3EG,EGR,...), **BLL** (Ref,[VV2000b],...), **Bla** (Ref,[DGT2001],...), * (PLX,UCAC2,...), **QSO** (Ref,QSO,...), **IR** (AKARI,IRAS,...), **V*** (AN,V*,...), **smm** (JCMTSE,JCMTSF), **AGN** (Ref)
ICRS coord. *(ep=J2000) :*	**22 02 43.29139 +42 16 39.9803 (Radio) [0.17 0.11 0] A** 2010AJ....139.1695L
FK4 coord. *(ep=B1950 eq=1950) :*	22 00 39.34 +42 02 08.3 [245.00 235.00 0]
Gal coord. *(ep=J2000) :*	092.5896 -10.4412 [0.17 0.11 71]
Proper motions *mas/yr* :	**7.9 3.8 [4.9 4.7 0] B** 2003yCat.1289....0Z
Radial velocity / Redshift / cz :	V(km/s) 19974 [~] / **z(spectroscopic) 0.069 [~]** / cz 20686 [~] **D** 2011NewA...16..503M
Parallaxes *(mas)*:	**1.9 [3.5] E** 1995GCTP..C.....0V
Angular size *(arcmin)*:	**0.0000105 0.0000057 17 (Rad) D** 2010AJ....139.1713C
Fluxes (6) :	**B 15.66 [~] D** 2010A&A...518A..10V **V 14.72 [~] D** 2010A&A...518A..10V **R 13.000 [~] E** 2003yCat.2246....0C **J 12.201 [0.029] C** 2003yCat.2246....0C **H 11.295 [0.037] C** 2003yCat.2246....0C **K 10.485 [0.022] C** 2003yCat.2246....0C

SIMBAD query around with radius 2 arcmin

Interactive AladinLite view



ADS



SAO/NASA ADS Astronomy Query Form for Tue May 8 04:27:51 2018

Sitemap | What's New | Feedback | Basic Search | Preferences | FAQ | HELP

Read about ADS's 2018 Roadmap

Send Query | Return Query Form | Store Default Form | Clear

Databases to query: ☑ Astronomy ☐ Physics ☑ arXiv e-prints

Authors: (Last, First M, one per line) ☑ SIMBAD ☑ NED ☑ ADS Objects

☐ Exact name matching — Object name/position search

☐ Require author for selection — ☐ Require object for selection

(◉ OR ○ AND ○ simple logic) — (Combine with: ◉ OR ○ AND)

balndford

Publication Date between (MM) (YYYY) and (MM) (YYYY)

Enter Title Words ☐ Require title for selection

(Combine with: ◉ OR ○ AND ○ simple logic ○ boolean logic)

Enter Abstract Words/Keywords ☐ Require text for selection

(Combine with: ◉ OR ○ AND ○ simple logic ○ boolean logic)

Return 200 items starting with number 1

Search within articles using ADS Bumblebee

Data Products

Archive — Data Products for selected row in Swift Master Catalog

- Do you want to view a data product? Click on its hyperlinked data format.
- Do you want to retrieve data products in a tarfile? Check the boxes beside each product and click one of the buttons at the bottom of the page.

Select all products for all rows

Swift Master Catalog (swiftmastr) FTOOLS

name	obsid	ra	dec	start_time	processing_date	xrt_exposure	uvot_exposure	bat_exposure	archive_date	_link_target_id	_link_tdrss_flag
3C66A	00035003003	02 22 42.90	+43 02 17.7	2005-11-27 01:14:02	2015-01-28	52415.88400	49799.27600	35854.00000	2005-12-08	35003	N

Select all products in this row

Swift Auxiliary Data			
Auxil Data (auxil)	DIRECTORY	51982 kB	updated: 2015/02/25 20:41:45
Auxil: Attitude and Orbit Data (sw00035003003sao.fits.gz)	FITS	22422 kB	updated: 2015/02/25 20:41:39
Auxil: Catalog of Files (sw00035003003pob.cat.gz)	FITS	12 kB	updated: 2015/02/25 20:41:38
Auxil: Job Parameter File (sw00035003003pjb.par.gz)	ASCII	2 kB	updated: 2015/02/25 20:41:38
Auxil: Make Filter File (sw00035003003s.mkf.gz)	FITS	3925 kB	updated: 2015/02/25 20:41:38
Auxil: Processing Parameter File (sw00035003003ppr.par.gz)	ASCII	2 kB	updated: 2015/02/25 20:41:38
Auxil: Spacecraft Attitude File (sw00035003003sat.fits.gz)	FITS	1183 kB	updated: 2015/02/25 20:41:39
Auxil: Spacecraft Engineering Data (sw00035003003sen.hk.gz)	FITS	22295 kB	updated: 2015/02/25 20:41:39
Auxil: Two-Line Element File (SWIFT_TLE_ARCHIVE.txt.15022.60775370.gz)	ASCII	97 kB	updated: 2015/02/25 20:41:30
Auxil: UTCF Corrections File (sw00035003003sti.fits.gz)	FITS	8 kB	updated: 2015/02/25 20:41:40
Swift BAT Data			
BAT All Data (bat)	DIRECTORY	175225 kB	updated: 2015/02/25 20:41:32
BAT HK Detector Array Panel (sw00035003003bdp.hk.gz)	FITS	1020 kB	updated: 2015/02/25 20:41:30
BAT HK Detector Enable Flag (sw00035003003bdecb.hk.gz)	FITS	147 kB	updated: 2015/02/25 20:41:30
BAT HK Engineering Data (sw00035003003ben.hk.gz)	FITS	4940 kB	updated: 2015/02/25 20:41:30
BAT HK Survey Header (sw00035003003bhd.hk.gz)	FITS	148 kB	updated: 2015/02/25 20:41:31
BAT Housekeeping Data (hk)	DIRECTORY	11155 kB	updated: 2015/02/25 20:41:31
BAT Masktag Data (masktag)	DIRECTORY	5893 kB	updated: 2015/02/25 20:41:31
BAT Masktag Level 1 Lightcurve (sw00035003003bmt00010005_rw.lc.gz)	FITS	3 kB	updated: 2015/02/25 20:41:31
BAT Masktag Level 1 Lightcurve (sw00035003003bmt00010009_rw.lc.gz)	FITS	851 kB	updated: 2015/02/25 20:41:31
BAT Masktag Level 1 Lightcurve (sw00035003003bmt00010051_rw.lc.gz)	FITS	3 kB	updated: 2015/02/25 20:41:31
BAT Masktag Level 1 Lightcurve (sw00035003003bmt00010346_rw.lc.gz)	FITS	3 kB	updated: 2015/02/25 20:41:31
BAT Masktag Level 1 Lightcurve (sw00035003003bmt00010500_rw.lc.gz)	FITS	2022 kB	updated: 2015/02/25 20:41:31
BAT Pulsar Data (pulsar)	DIRECTORY	1418 kB	updated: 2015/02/25 20:41:31
BAT Rate Data (rate)	DIRECTORY	9571 kB	updated: 2015/02/25 20:41:31
BAT Survey Data (survey)	DIRECTORY	147188 kB	updated: 2015/02/25 20:41:37
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo0002g0002.dph.gz)	FITS	3884 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo0002g0003.dph.gz)	FITS	3389 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b4g037d.dph.gz)	FITS	2671 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b5g037e.dph.gz)	FITS	3527 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b6g037e.dph.gz)	FITS	3509 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b7g037e.dph.gz)	FITS	4861 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b8g037f.dph.gz)	FITS	4570 kB	updated: 2015/02/25 20:41:32
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09b9g037f.dph.gz)	FITS	5677 kB	updated: 2015/02/25 20:41:33
BAT Survey Level 1 Pre-Burst DPH (sw00035003003bsvpbo09bag037f.dph.gz)	FITS	5673 kB	updated: 2015/02/25 20:41:33

Data Product Retrieval

Data Product Retrieval

- **Select the checkboxes for the rows of interest above,**
- **Un-check any data products below you are not interested in**
- **Select the Data Product Retrieval tab for retrieval options**

Data Products available for swiftmastr

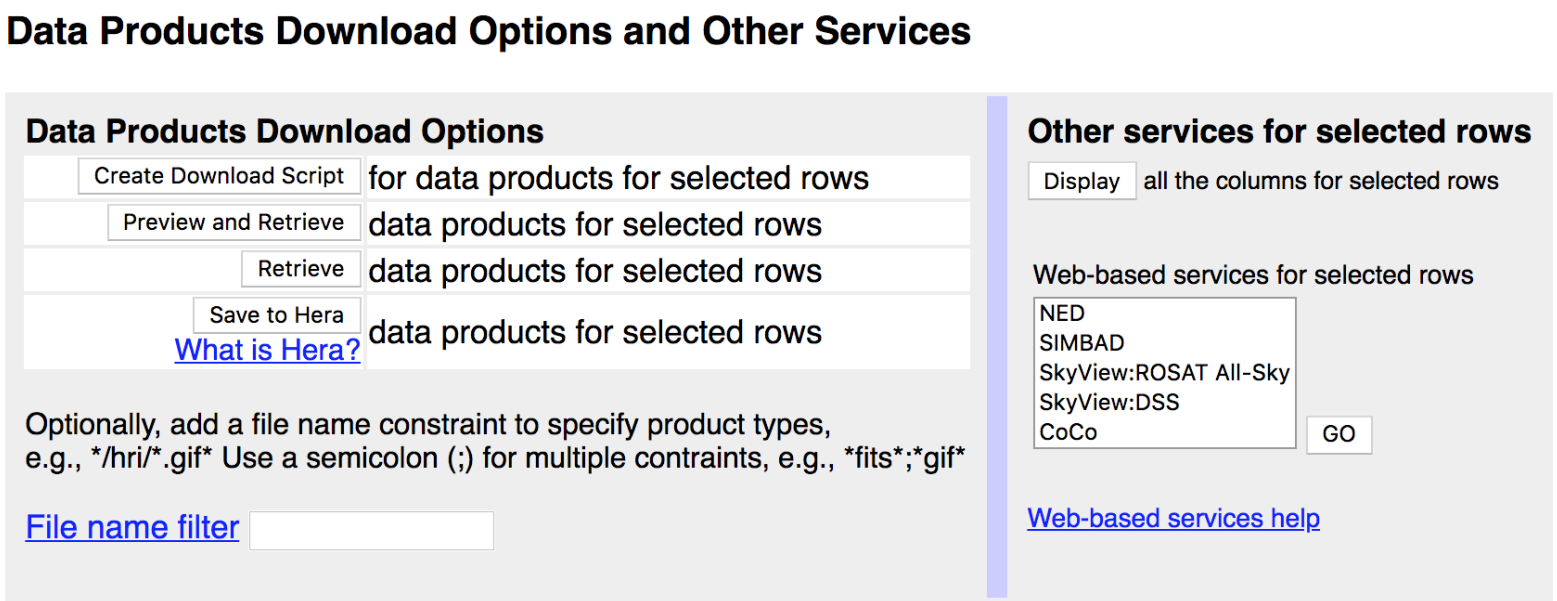
- [x] **All**
- [x] Swift Auxiliary Data (aux)
- [x] Swift BAT Data (bat data)
- [x] Swift Logs (logs)
- [x] Swift TDRSS Data (tdrss data)
- [x] Swift UVOT Data (uvot data)
- [x] Swift XRT Data (xrt data)

Retrieve Data Products for selected rows

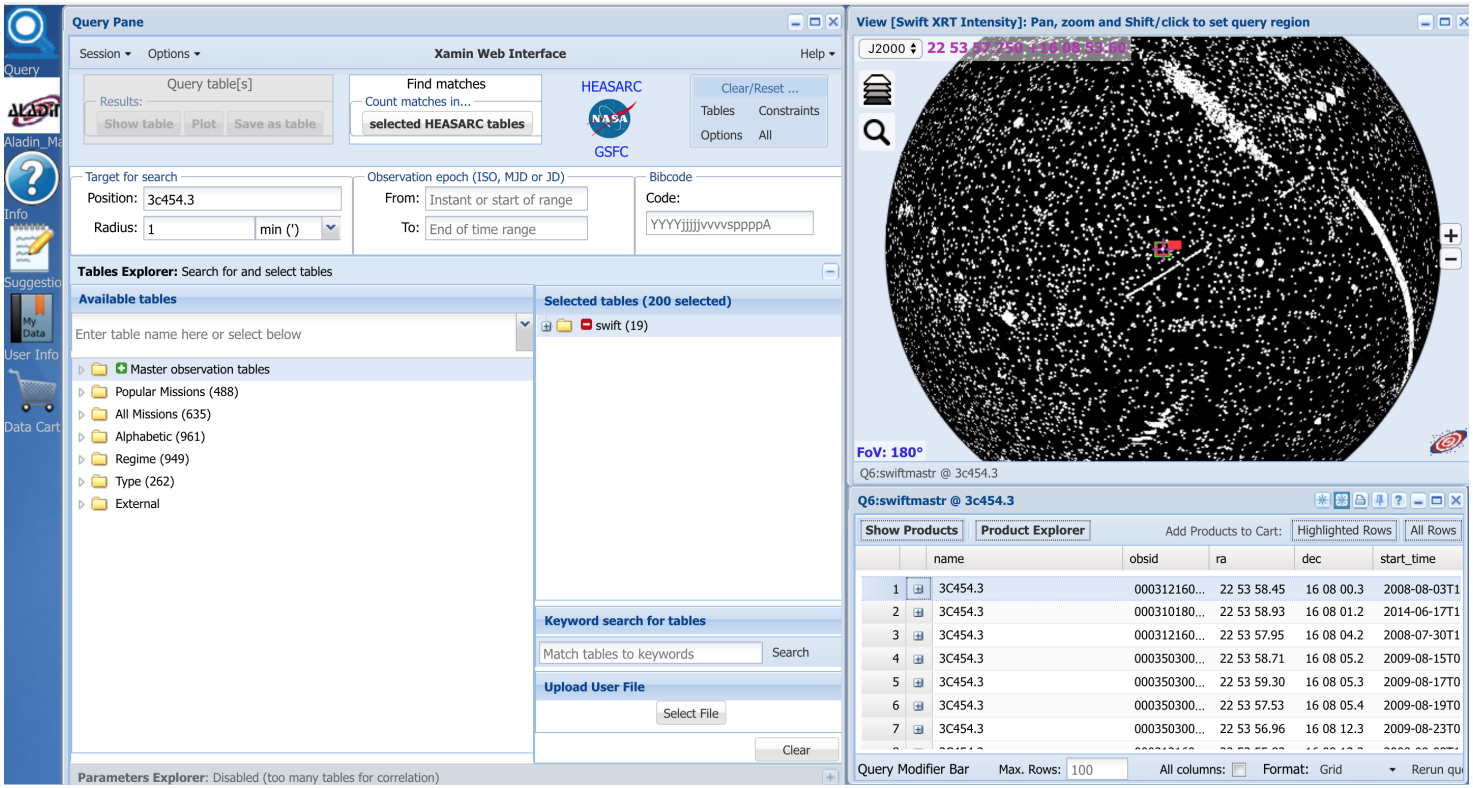
Further Actions:

Do you want to Cross-correlate your swiftmastr results with another catalog or table? (help)

Data Product Retrieval 2



Xamin



Both Xamin and the classic Brows Mission Interface are accessible through command line batch interfaces.

HEASARC Software

- FTOOLS - General FITS file utility programs and mission-specific data analysis tools.
- FV - Interactive editor and viewer for astronomical data files in FITS format. Also provides access to Hera.
- PIMMS - Program to estimate count rates from fluxes or vice versa, or to estimate count rates in one instrument from those measured in another.
- SAOImage DS9 - Astronomical Imaging and Data Visualization Application.
- XANADU - Suite of timing (xronos), image (ximage) and spectral (xspec) analysis programs.
- HEAsoft.

Deep Space Nine

DS9

SAOImage DS9

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Tweet

SAOImage DS9 is an astronomical imaging and data visualization application. DS9 supports FITS images and binary tables, multiple frame buffers, region manipulation, and many scale algorithms and colormaps. It provides for easy communication with external analysis tasks and is highly configurable and extensible via XPA and SAMP.

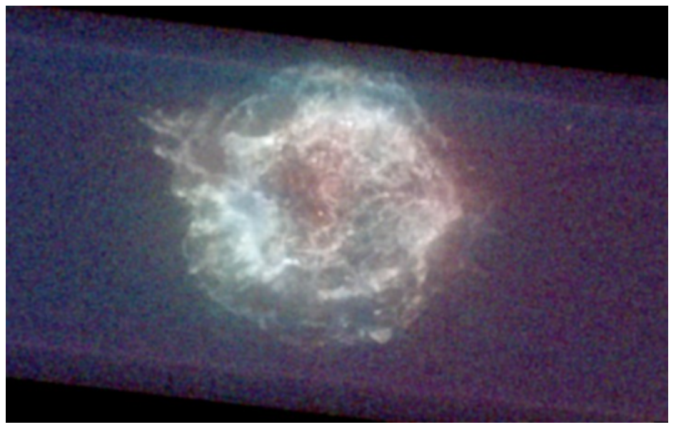
DS9 is a stand-alone application. It requires no installation or support files. All versions and platforms support a consistent set of GUI and functional capabilities.

DS9 supports advanced features such as 2-D, 3-D and RGB frame buffers, mosaic images, tiling, blinking, geometric markers, colormap manipulation, scaling, arbitrary zoom, cropping, rotation, pan, and a variety of coordinate systems.

The GUI for DS9 is user configurable. GUI elements such as the coordinate display, panner, magnifier, horizontal and vertical graphs, button bar, and color bar can be configured via menus or the command line.

SAOImage DS9 Version 7.6

DS9 version 7.6 is now available on the **Download** page. New to version 7.6 is the new Windows 32/64 bit and MacOS High Sierra ports. Please see the **What's New** page for more details.



Tweets by @SAOImageDS9

SAOImageDS9
@SAOImageDS9

New release of SAOImageDS9 7.6 is now available at ds9.si.edu/site/Download.... Please see Whats New and Release Notes for detailsds9.si.edu/site/Whats_New...ds9.si.edu/doc/release/r7...

Apr 17, 2018

SAOImageDS9
@SAOImageDS9

MacOS High Sierra Install: no longer necessary to disable 'Gatekeeper'

Oct 31, 2017

SAOImageDS9

Embed View on Twitter

SAOImage DS9 development has been made possible by funding from the Chandra X-ray Science Center (CXC) and the High Energy Astrophysics Science Archive Center (HEASARC). Additional funding was provided by the JWST Mission office at Space Telescope Science Institute to improve capabilities for 3-D data visualization.

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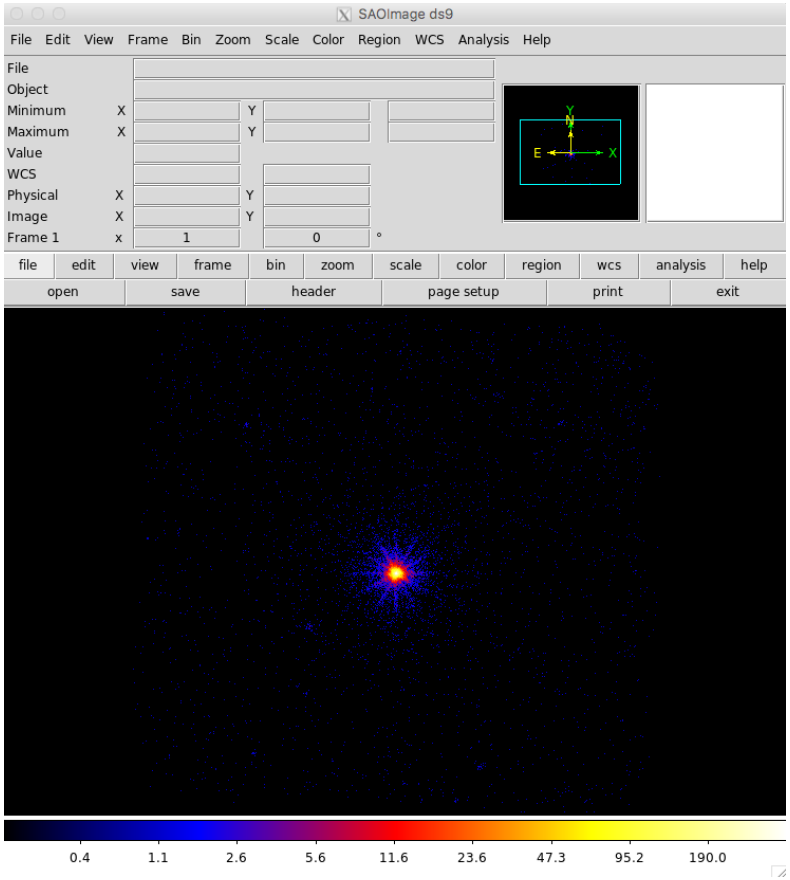
SMITHSONIAN ASTROPHYSICAL OBSERVATORY | 60 GARDEN STREET | CAMBRIDGE, MA 02138

DS9



SAOImage DS9 is an astronomical imaging and data visualization application. DS9 supports FITS images and binary tables, multiple frame buffers, region manipulation, and many scale algorithms and colormaps.

FITS File

- Flexible Image Transport System (FITS) is an open standard defining a digital file format useful for storage, transmission and processing of data, formatted as N-dimensional arrays, or tables. FITS is the most commonly used digital file format in astronomy.
- The FITS standard has special (optional) features for scientific data, for example it includes many provisions for describing photometric and spatial calibration information, together with image origin metadata.
- A major feature of the FITS format is that image metadata is stored in a human-readable ASCII header, so that an interested user can examine the headers to investigate a file of unknown provenance.

HEAsoft

HEAsoft is a unified release of modular, multi-mission reduction and analysis software.

- FTOOLS
- XANADU
- Mission-specific packages

The current version of HEAsoft is 6.24 (24 April 2018).

HEAsoft - FTOOLS

FITS file manipulation tools

General-Use FTOOLS

- Attitude
- Caltools
- Futils
- Fimage
- HEASARC
- HEASim
- HEASPtools
- HEAtools
- HEAGen
- FV
- Time

HEAsoft - XANADU

HEAsoft - XANADU

The XANADU software package comprises high-level, multi-mission tasks for X-ray astronomical data analysis.

- Timing (XRONOS)
- Imaging (XIMAGE)
- Spectral (XSPEC)

HEAsoft - Mission tools

Mission specific tools

- ASCA
- Einstein
- EXOSAT
- CGRO
- HEAO-1
- Hitomi
- INTEGRAL
- NICER
- NuSTAR
- OSO-8
- ROSAT
- Suzaku
- Vela
- XTE
- Swift