X-ray archives, databases and article retrieval

X-ray archives:

A quick guide

Typologies of archives

Generic (i.e., multi-mission) archives

NASA
ESA
ASI

Not necessarily only X-ray
Additional tools for data analysis available

Mission-specific archives

XMM-*Newton*
Chandra
NuSTAR
Swift
and many others

+ NED & Simbad to search for multi-wavelength information and references about sources

X-ray archives. I. NASA

HEASARC Home | Observatories | Archive | Calibration | Software | Tools | Students/Teachers/Public

NASA's HEASARC

High Energy Astrophysics Science Archive Research Center (HEASARC) - NASA

https://heasarc.gsfc.nasa.gov → Archive → Browse

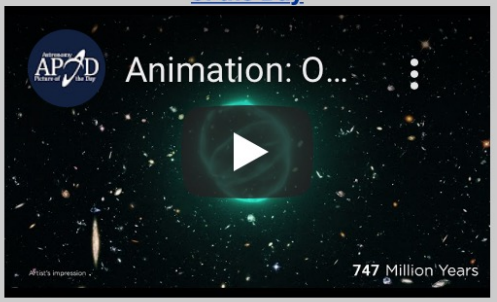
Active Guest Observer Facilities/Science Centers	
AGILE	*AstroSat*
Chandra	Fermi
HaloSat	INTEGRAL
NEW! IXPE	
MAXI	NICER
NuSTAR	*SRG/eROSITA*
Swift	TESS
XMM-Newton	XRISM
Historic Guest Observer Facilities/Science Centers	
ASCA	BeppoSAX
CGRO	COBE
EUVE	GALEX
Hitomi	HETE-2
LPF DRS	ROSAT
RXTE	Suzaku
WMAP	

The High Energy Astrophysics Science Archive Research Center (HEASARC) is the primary archive for NASA's (and other space agencies') missions studying electromagnetic radiation from extremely energetic cosmic phenomena ranging from black holes to the Big Bang. Since its merger with the Legacy Archive for Microwave Background Data Analysis (LAMBDA) in 2008, the HEASARC archive contains data obtained by high-energy astronomy missions observing in the extreme-ultraviolet (EUV), X-ray, and gamma-ray bands, as well as data from space missions, balloons, and ground-based facilities that have studied the relic cosmic microwave background (CMB) radiation in the sub-mm, mm and cm bands.

The HEASARC is a member of the **NASA Astronomical Virtual Observatories (NAVO)** where we work with other NASA archives to ensure comprehensive and consistent VO access to NASA mission datasets. Users may now query the HEASARC's catalogs using VO-enabled services and specialized tools. **This page** describes how to get to the HEASARC VO-enabled services and provides information on other HEASARC VO activities.

HEASARC Picture of the Week

APOD: Astronomy Picture of the Day



Latest News

- **Chandra CALDB 4.9.7 installed at the HEASARC** (28 Mar 2022)
The Chandra CalDB 4.9.7 is now installed and available at the HEASARC. Chandra 4.9.7 was released by the CXC on March 24, 2022.
- **NuSTAR Caldb Update** (28 Mar 2022)
The NuSTAR FPM caldb has been updated to version 20220328. This release includes a new clock correction file, v136. Please see the release notes for more details.
- **HEASoft 6.30 released** (22 Mar 2022)
HEASoft 6.30 has been released. HEASoft 6.30 includes the first release of the analysis tools for IXPE, along with other improvements. Please see the 6.30 release notes for details.
- **NuSTAR Caldb Update** (21 Mar 2022)
The NuSTAR FPM caldb has been updated to version 20220316. This release includes a new clock correction file, v135. Please see the release notes for more details.
- **CALDB.CONFIG file updated for IXPE** (21 Mar 2022)
The CALDB file caldb.config has been updated for the first release of the IXPE caldb. Caldb access for

NASA's HEASARC: Archive

Xamin | Browse | ASCII Catalogs | FTP Area | SkyView | ARK/RPS | VO | DataScope | Other Archives

Latest News | Other Resources | Archive Information

Access to the catalogs and astronomical archives of the HEASARC

Select an interface or start using our keyword search tool below.

HEASARC Data Access

- **New Xamin Interfaces**

Xamin Web Interface Intro HELP
Our new faster and more powerful access to HEASARC data

Xamin Batch Interface Download HELP
Use Xamin from the command line on your machine

- **Traditional Browse Interfaces** Tips Archive

Browse Mission Interface HELP
Our traditional full-featured interface

Browse Keyword Search HELP
Search-Engine-like query using keywords

Browse Table Index
List of all tables in the HEASARC database: **if we don't have the one you want, ask us to add it**

Browse Correlation HELP
Cross-correlation of full tables

Browse Notification Service HELP
Get notified when new data is available in the archive

Browse Batch Interface Download HELP
Perl scripts (by default these now query Xamin database)

Xamin Quick Search

Query Parameters:

Tables, positions, times, ...

Submit Reset

Try **ROSAT 3c273 1d** to get ROSAT data within one degree of 3c273 or **chanmaster bli>80 status='archived'** to get archived Chandra Observations data near the north galactic pole.

Note: For more than one target or when using any qualifier other than a mission name, use quotes around targets that have embedded white space.(e.g., **'ar lac'**).

More information and examples

ASCA: ☐	BEPPOSAX: ☐	CGRO: ☐
Chandra: ☐	Fermi: ☐	FUSE: ☐
HST: ☐	INTEGRAL: ☐	NuSTAR: ☐
Planck: ☐	ROSAT: ☐	RXTE: ☐
Spitzer: ☐	Suzaku: ☐	Swift: ☐
WMAP: ☐	XMM-Newton: ☐	Select all: ☐

Search on the basis of coordinates/source name + multi-wavelength missions

1. Do you want to search around a position ... ?
(If you want to search on parameters other than object name or coordinates, select "Detailed Mission/Catalog Search".)

Object Name or Coordinates: _____ **and/or** Select Local File: [Choose File] no file selected

e.g. **Cyg X-1** or **12 00 00, 4 12 6** or **Cyg X-2; 12.235, 15.345** (Note use of semi-colons (;) to separate multiple object names or coordinate pairs)

File should contain objects and/or coordinate pairs one per line or separated by semi-colons.

Coordinate System: J2000

Search Radius: Default arcmin

Default uses the optimum radius for each catalog searched.

... and/or search by date?

Observation Dates: _____ YYYY-MM-DD hh:mm:ss or MJD: DDDDD.ddd

Not all tables have observation dates. For those that do, the time portion of the date is optional. Separate multiple dates/ranges with semicolons (;). Range operator is '..'. (e.g. 1992-12-31; 48980.5; 1995-01-15 12:00:00; 1997-03-20 .. 2000-10-18)

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

- ☐ Most Requested Missions
  - ☐ **Chandra** [*CXC*,*CSC*]
  - ☐ **Fermi**
  - ☐ **Hitomi**
  - ☐ **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*]

Search on the basis of coordinates/source name + multi-wavelength missions

1. Do you want to search around a position ... ?
(If you want to search on parameters other than object name or coordinates, select "Detailed Mission/Catalog Search".)

Object Name or Coordinates: 3C111 **and/or** **Select Local File:** Choose File no file selected

e.g. **Cyg X-1** or **12 00 00, 4 12 6** or **Cyg X-2; 12.235, 15.345** (Note use of semi-colons (;) to separate multiple object names or coordinate pairs)

File should contain objects and/or coordinate pairs one per line or separated by semi-colons.

Coordinate System: J2000

Search Radius: Default arcmin

Default uses the optimum radius for each catalog searched.

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Observation Dates: YYYY-MM-DD hh:mm:ss or MJD: DDDDD.ddd

Not all tables have observation dates. For those that do, the time portion of the date is optional. Separate multiple dates/ranges with semicolons (;). Range operator is '..'. (e.g. 1992-12-31; 48980.5; 1995-01-15 12:00:00; 1997-03-20 .. 2000-10-18)

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  - **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** [*DARTS*]
  - 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*]

View Selected Tables | Reset

Active HEASARC Missions

ASCA	ASCA Proposals 1	ASCA Master Catalog 1	Tartarus: Reduced ASCA AGN Data (Version 3.1) 1
CHANDRA	Chandra Observations 7	Chandra XAssist Source List 2	Chandra ACIS GSG Point-Like X-Ray Source Catalog 6
FERMI	Fermi GBM Burst Catalog 1	Fermi GBM Trigger Catalog 3	
GALEX	Galaxy Evolution Explorer (GALEX) Observation Log 2		
HETE-2	HETE-2 Timeline 8822		
INTEGRAL	INTEGRAL Science Window Data 2549	INTEGRAL IBIS AGN Catalog 1	INTEGRAL Reference Catalog 1
	Second INTEGRAL AGN Catalog 1	INTEGRAL Observing Program 3	INTEGRAL Public Data Results Catalog 3
	INTEGRAL ISGRI 4-Year Source Catalog 1	INTEGRAL Public Pointed Science Window Data 1259	Fifth IBIS/ISGRI Soft Gamma-Ray Survey Catalog 1
	INTEGRAL IBIS All-Sky Survey of Hard X-Ray Sources 1	INTEGRAL IBIS 9-Year Galactic Hard X-Ray Survey Catalog 1	INTEGRAL IBIS Hard X-Ray Survey Above 100 keV Source Catalog 1
RXTE	XTE Master Catalog 1007	XTE Target Index Catalog 15	XTE Proposal Info & Abstracts 15
	XTE Archived Public Slew Data 1995	XTE Mission-Long Source Catalog 1	
SPITZER	Spitzer Space Telescope Observation Log 3		
SUZAKU	Suzaku Master Catalog 4	Suzaku XIS Configuration Log 24	
SWIFT	Swift Master Catalog 14	Swift BAT Instrument Log 211	Swift XRT Instrument Log 329
	Swift UVOT Instrument Log 270	Swift/UVOT Serendipitous Source Catalog, v1.1 28	Swift BAT 60-Month Survey of Active Galactic Nuclei Catalog 1
	Swift/UVOT Serendipitous Source Catalog, v1.1: Observations IDs 2		
X NEWTON	XMM-Newton Accepted Targets 5	XMM-Newton XAssist Source List 14	XMM-Newton Master Log & Public Archive 3
	XMM-Newton Slew Survey Full Source Catalog, v2.0 1	XMM-Newton Slew Survey Clean Source Catalog, v2.0 1	XMM-Newton Serendipitous Source Catalog (3XMM DR7 Version) 3
	XMM-Newton Optical Monitor SUSS Catalog, v3.0: Observation IDs 2		

Query Information | Query Results | Data Products Retrieval | Help | Processing Query...

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

Click to view information about your query

DSS Optical image, 2.83'

RASS X-ray image, 75.0'

Images centered on requested position

ed on:

Object/Coordinates: 3c111
resolved by SIMBAD (local cache) to [04 18 21.28, +38 01 35.8]

Using the coordinates from the SIMBAD resolver for 3c111.

Coord. System: Equatorial, equinox 2000

Maximum Rows: (no limit)

Search Radius: Default arc minutes

Reissue Query | Save Query To File

Redisplay as HTML Table

Printer-Friendly Version | Save All Objects To File | Reset

Browse Tip: Do you know how to get all rows of a table without doing a search? Learn more on this topic or See all tips

Table Name/Row Count Summary: Querying table 5 out of 7.

Click on table name to view search results

xmmao:XMM-Newton Accepted Targets	5	**xmmxassist**:XMM-Newton XAssist Source List	14
xmmmaster:XMM-Newton Master Log & Public Archive	3	**xmmslewful**:XMM-Newton Slew Survey Full Source Catalog, v2.0	1
xmmslewcln:XMM-Newton Slew Survey Clean Source Catalog, v2.0		**xmmssc**:XMM-Newton Serendipitous Source Catalog (3XMM DR7 Version)	
xmmomsuob:XMM-Newton Optical Monitor SUSS Catalog, v3.0: Observation IDs			

Query Information | Query Results | Data Products Retrieval | Help

xmm-newton

xmmao | xmmxassist | xmmmaster | xmmslewful | xmmslewcln | xmmssc | xmmomsuob

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 rc XMM-Newton Accepted Targets

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, F: FOV plot for observ

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

Low off-axis angle = the selected source is likely the target of the pointing

XMM-Newton Accepted Targets (xmmao) Bulletin

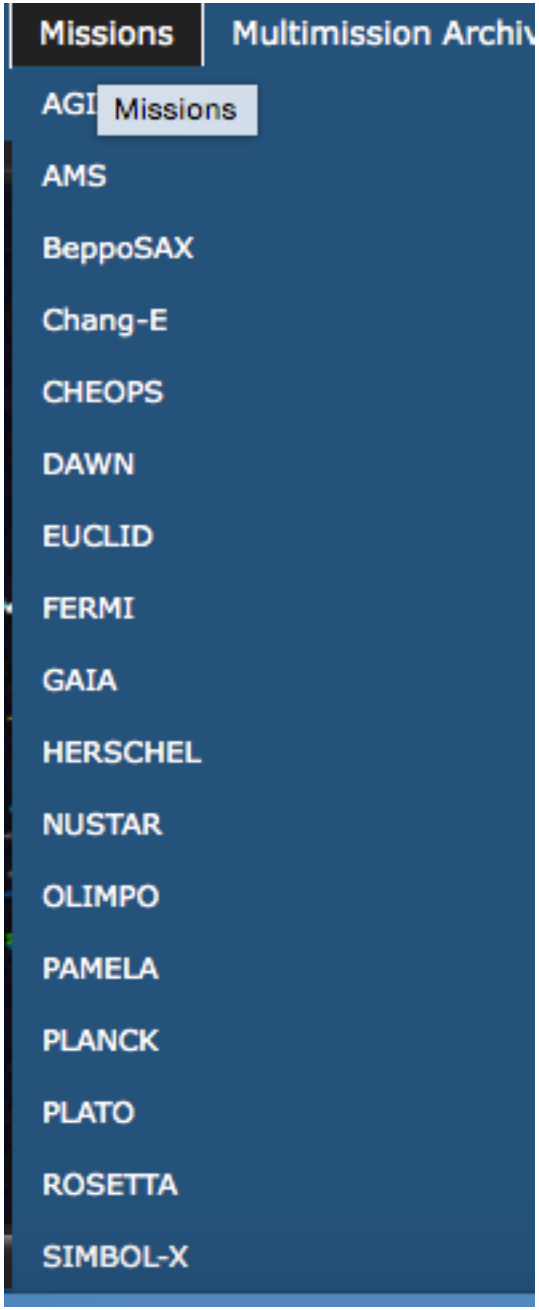
Search radius used: 15.00 '

Select All	Services	pno	name	ra	dec	proposal type	priority	exposure [s]	pi lname	pi fname	target id	Search Offset ['] from (target)
	O R N S D	55218	3C111	04 18 21.30	+38 01 36.0	AO-7	B	132000	MARSCHER	ALAN	05521801	0.006 (3c111)
	O R N S D	72424	3C 111	04 18 21.30	+38 01 36.0	AO-12	T	102000	TORRESI	ELEONORA	07242402	0.006 (3c111)
	O R N S D	69169	3C 111	04 18 21.30	+38 01 36.0	AO-11	T	92000	TOMBESI	FRANCESCO	06916901	0.006 (3c111)
	O R N S D	6594	3C 111	04 18 21.07	+38 01 32.6	AO-1	B	44554	ERACLEOUS	MICHAEL		0.067 (3c111)
	O R N S D	55150	3C 111	04 18 21.30	+38 01 36.0	AO-7	T	0	VERCELLONE	STEFANO	05515023	0.006 (3c111)

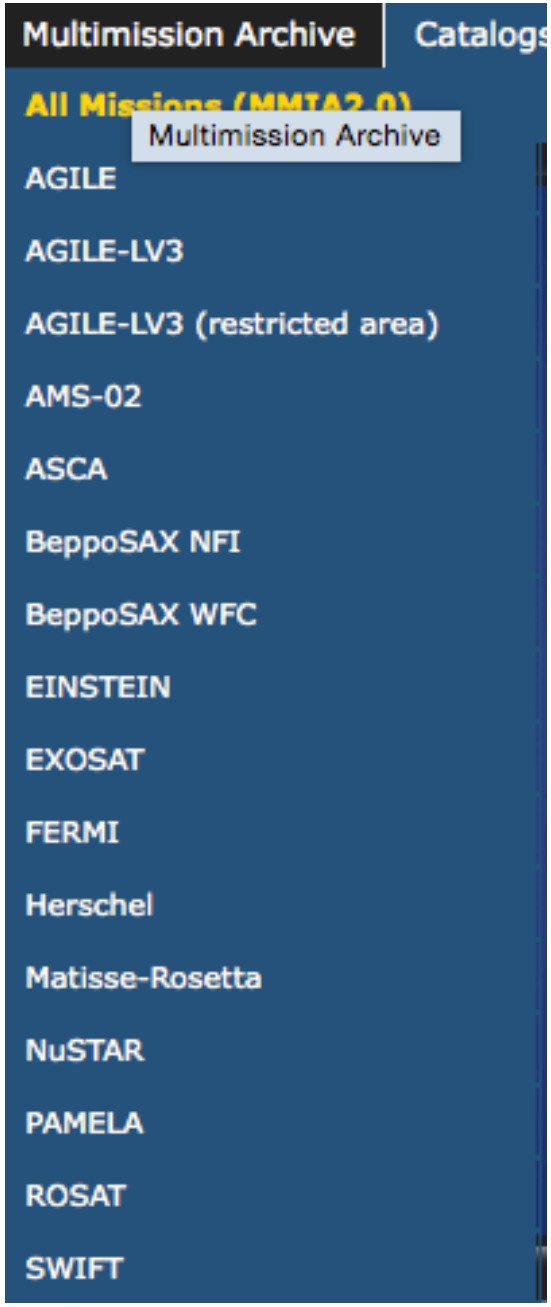
5 rows retrieved from xmmao

List of observations with the main observing information

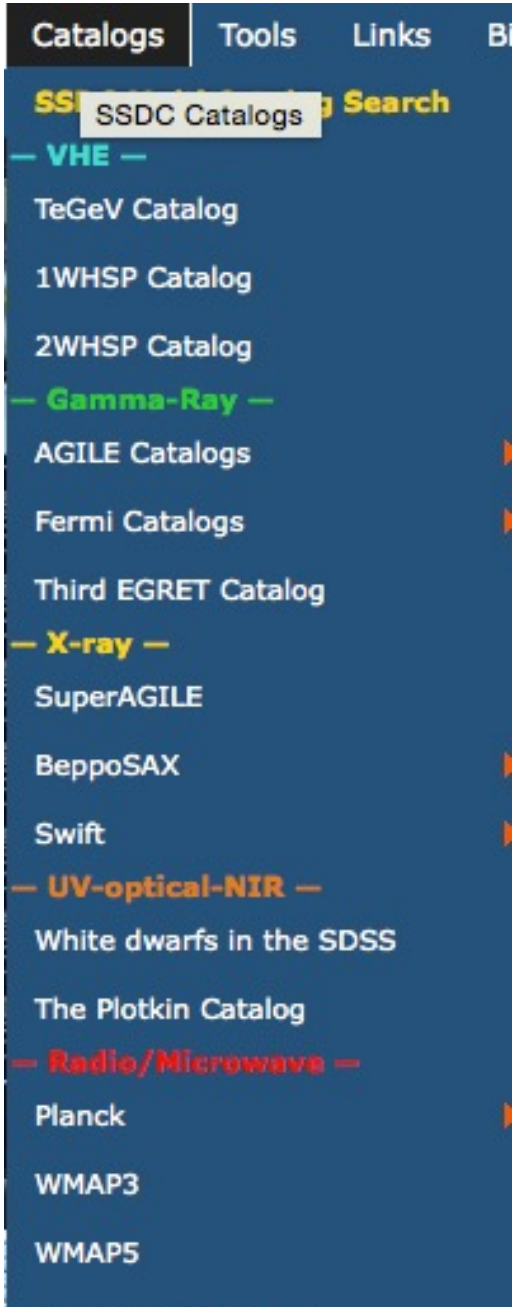
X-ray archives. II. ASI (Italian Space Agency)



Missions

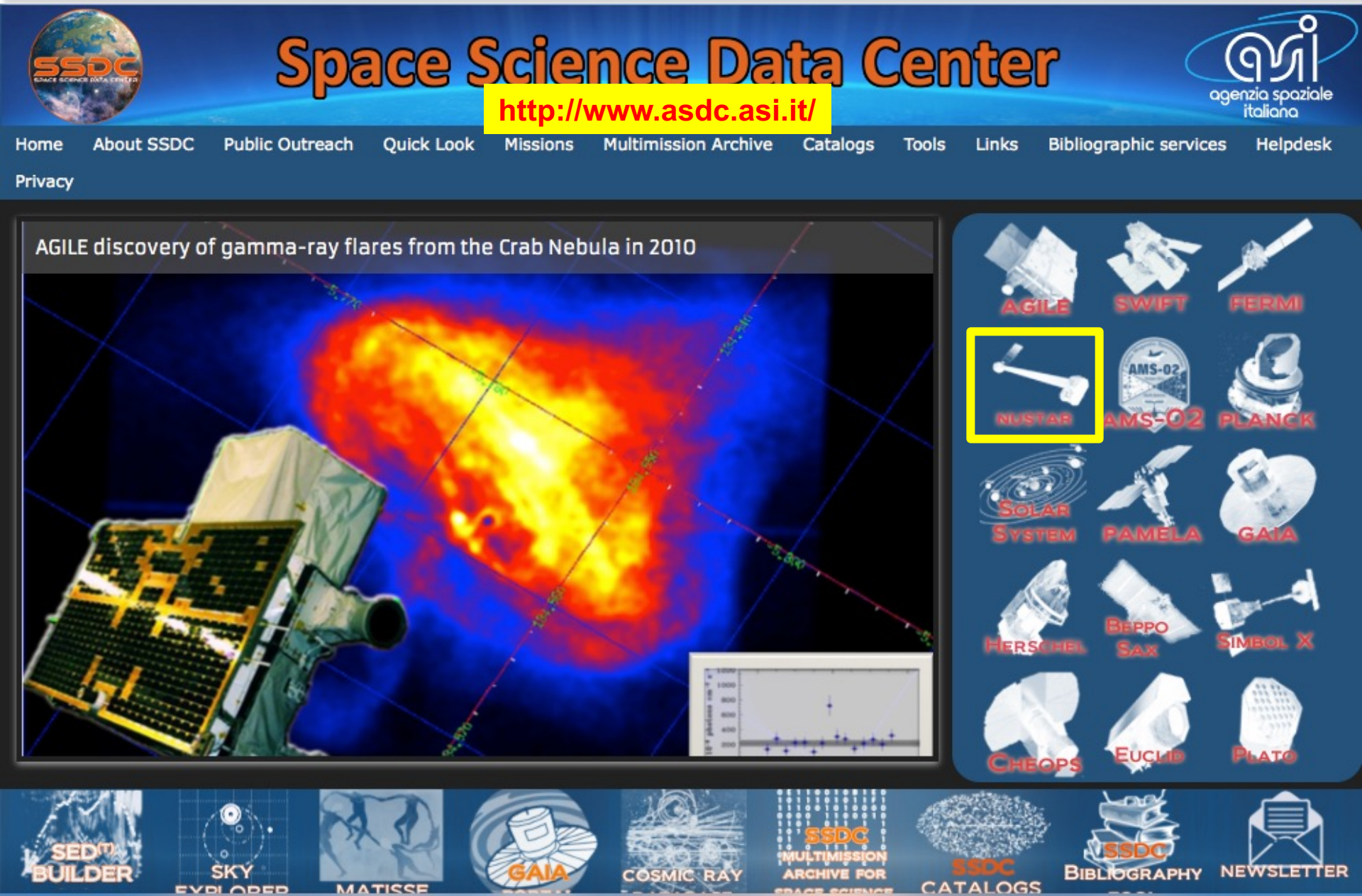


Multi-mission archive



Catalogs

X-ray archives. II. ASI (Italian Space Agency)



The Nuclear Spectroscopic Telescope Array Mission (NuSTAR)

Mission Overview:

NuSTAR -launched June 13, 2012- is a Small Explorer mission led by the California Institute of Technology (Caltech) and managed by NASA's Jet Propulsion Laboratory in Pasadena. The observatory is the first focusing high-energy X-ray mission (3-80 keV) in orbit, opening the hard X-ray sky for sensitive study for the first time.

The primary science objectives are the study of the evolution of massive black holes, of compact objects, of the nature of the massive black hole in the center of the Milky Way, of the explosion dynamics and nucleosynthesis in supernovae and of the nature of particle acceleration in relativistic jets in Active Galactic Nuclei.

The Italian contribution includes the provision of the Italian Space Agency (ASI) ground station in Malindi (Kenya) and the ASI Space Science Data Center (SSDC). Moreover, Italy participates to the project with a team of scientists of the National Institute for Astrophysics (INAF) which collaborates on the primary scientific mission goals.

The primary reference for NuSTAR is Harrison et al. 2013. A full description of the mission can be found at the following link:

Latest NuSTAR News

- **(Sep 17, 2015)** NuSTAR 7th Data Release at ASDC
- **(May 12, 2015)** Asymmetric explosion of SN1987A from ^{44}Ti emission lines revealed with NuSTAR
- **(Mar 31, 2015)** NuSTAR 6th Data Release at ASDC
- **(Jan 20, 2015)** NuSTAR Principal Investigator receives the 2015 Bruno Rossi Prize

X-ray archives. III. XMM-*Newton*

https://www.cosmos.esa.int/web/xmm-newton/xsa

- Home / Latest News
- XMM-Newton 20th Anniversary
- Conferences & Meetings
- News
- General User Support
- Proposers Info
- Observers Info
- Data Analysis
- Archive, Pipeline & Catalogues
- Calibration & Background
- SOC Info
- About XMM-Newton
- Image Gallery
- Publications
- Other Links

XMM-NEWTON SCIENCEX ARCHIVE (XSA)

INDEX

ACCESS TO XMM-NEWTON DATA AND SOURCE CATALOGUES

Search the XMM-Newton Science Archive (XSA)

Direct access to the XSA data via URL or AIO (Archive InterOperability):

Command line and URL access to the XSA data

Astroquery and TAP (Table Access Protocol) access to the XSA Database:

Astroquery and **TAP queries** to the XSA Database

XMM-Newton Science Archive Search

Position | File

- Name
- Equatorial
- Galactic

Target in: Field Of View | Circle | Box

Name: 3C111 for: Resolve

▶ Observation and Proposal filters

▶ Display options

Reset Form

Catalogue Search > | Submit

The search using other parameters (e.g., PI of the proposal) is also a viable option

XMM-Newton Science Archive

esa

HOME | SEARCH | COMMAND & URL ACCESS | INTERACTIVE DATA ANALYSIS | TAP QUERIES | CATALOGUES & TOOLS | DOCUMENTATION | Sign in

Back to Search | Close all

Results #1

OBSERVATIONS (3) | SLEW EXPOSURES (7)

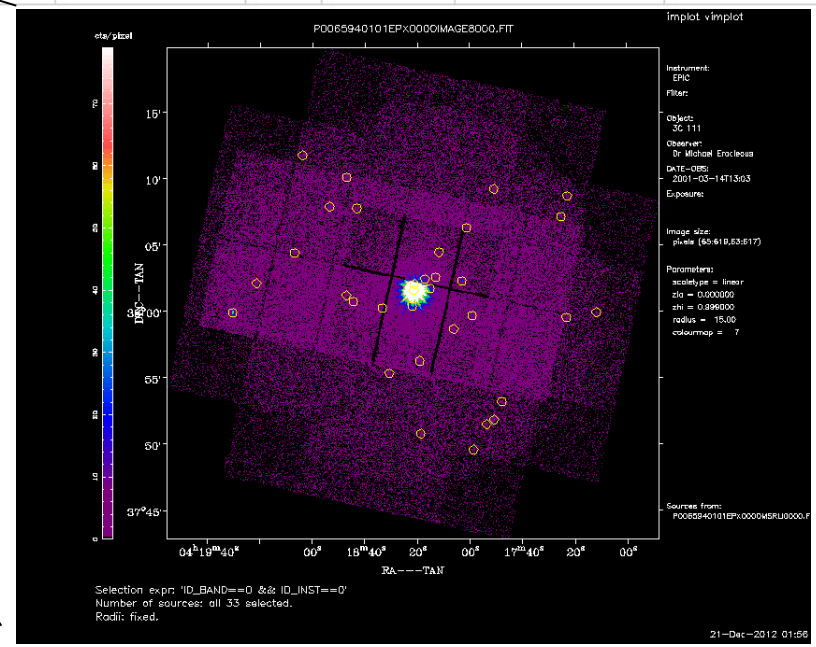
Columns | Column units | Add to Basket | Save table as | Send table to | Reprocess

			Obs.ID	EPIC	RGS	Target	RA	DEC	Rev	Distance	Start Date	End Date	Dur.
☐			0065940101			3C 111	04h 18m 21.07s	+38d 01' 32.6"	231	0.07	2001-03-14 12:56:44	2001-03-15 01:23:52	44828
☐			0552180101			3C111	04h 18m 21.27s	+38d 01' 35.7"	1683	0	2009-02-15 17:25:11	2009-02-17 04:01:23	124572
☐			0552180201	N/A	N/A	3C111	04h 18m 21.27s	+38d 01' 35.7"	1683	0	2009-02-15 14:44:57	2009-02-15 16:55:09	7812

obsID

data preview

nominal exposure



You can choose the kind of data to download (**odf**: needed for full reprocessing)

Updated calibration (CCF) files are also needed

XMM-Newton Science Archive

esa

HOME | SEARCH | COMMAND & URL ACCESS | INTERACTIVE DATA ANALYSIS | TAP QUERIES | CATALOGUES & TOOLS | DOCUMENTATION | Sign in

Back to Search | Close all

Results #1

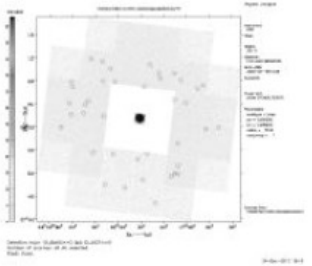
OBSERVATIONS (3) | SLEW EXPOSURES (7)

Columns | Column units | Add to Basket | Save table as | Send table to | Reprocess

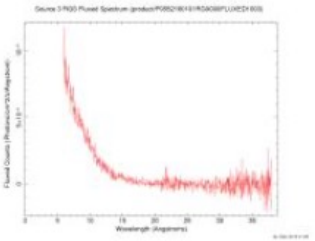
Obs.ID	EPIC	RGS	Target	RA	DEC	Rev	Distance	Start Date	End Date	Dur.
0065940101			3C 111	04h 18m 21.07s	+38d 01' 32.6"	231	0.07	2001-03-14 12:56:44	2001-03-15 01:23:52	44828
0552180101			3C111	04h 18m 21.27s	+38d 01' 35.7"	1683	0	2009-02-15 17:25:11	2009-02-17 04:01:23	124572
0552180201	N/A	N/A	3C111	04h 18m 21.27s	+38d 01' 35.7"	1683	0	2009-02-15 14:44:57	2009-02-15 16:55:09	7812

details on the observation: summary, setup, exposures, publications + images+spectra

Details for Observation 0552180101



EPIC Image



RGS fluxed spectrum

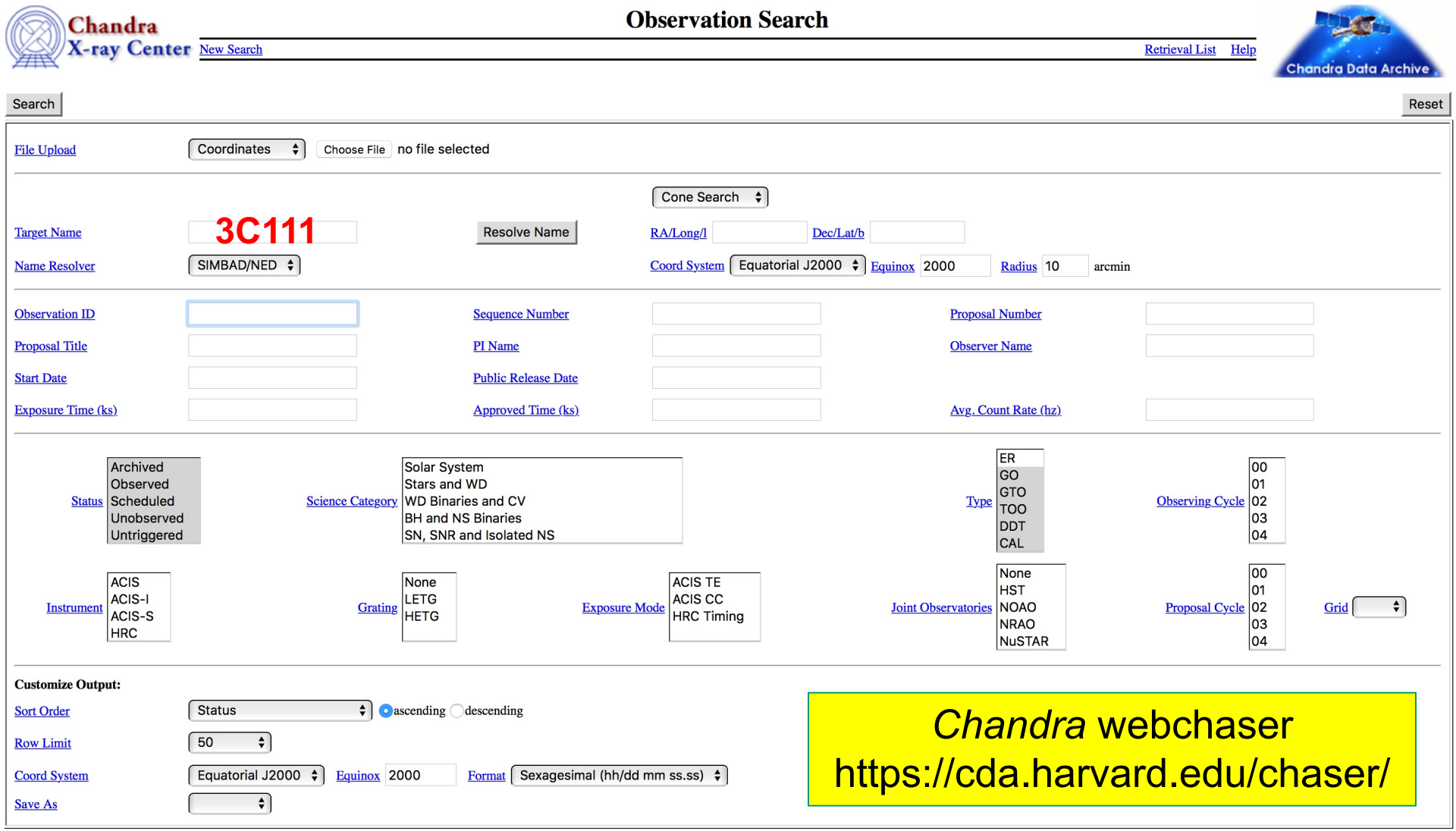
Summary | Exposures | Publications

Obs. ID	0552180101
Revolution	1683
Target	3C111
Exposures	3 EPIC, 59 OM, 2 RGS

Proposal Abstract

PSD BREAK, JET SCALE, AND BLACK-HOLE MASS OF THE FR II RADIO GALAXY 3C 111

X-ray archives. IV. *Chandra*



Chandra webchaser
https://cda.harvard.edu/chaser/

Selection possible on the basis of source name/coordinates/PI name/ObsID, etc

you can view the details of each observation

Chandra X-ray Center

Search Results

New Search | Search Results | Retrieval List | Help

Chandra Data Archive

View Observation Information

Add Products to Retrieval List

Primary package
Secondary package
Custom selection

Instrument

Select all | Unselect all

Select	Row	Seq Num	Obs ID	Instrument	Grating	Appr Exp	Exposure	Target Name	PI Name	RA	Dec	Status	Data Mode	Exp Mode	Avg Cnt Rate	Evt Cnt	Start Date	Public
☐	1	702798	14990	ACIS-S	NONE	127.0	92.1	3C 111	Perlman	04 18 21.30	+38 01 36.00	archived	VFAINT	TE	5.65	520726	2013-01-10 04:29:04	2014-0
☐	2	703007	16219	ACIS-S	HETG	150.0	143.41	3C 111	Tombesi	04 18 21.30	+38 01 35.80	archived	FAINT	TE	7.63	1094231	2014-11-04 10:48:56	2015-1
☐	3	703412	19615	ACIS-S	NONE	26.0	22.54	3C 111	Perlman	04 18 21.30	+38 01 36.00	observed	VFAINT	TE	3.07	69154	2017-12-26 15:46:41	2019-0
☐	4	703412	20907	ACIS-S	NONE	32.0	28.16	3C 111	Perlman	04 18 21.30	+38 01 36.00	observed	VFAINT	TE	2.97	83648	2017-12-29 03:21:51	2019-0
☐	5	703412	20908	ACIS-S	NONE	32.0	27.23	3C 111	Perlman	04 18 21.30	+38 01 36.00	observed	VFAINT	TE	2.93	79812	2017-12-29 18:15:31	2019-0
☐	6	703413	19616	ACIS-S	NONE	90.0		3C 111	Perlman	04 18 21.30	+38 01 36.00	unobserved	VFAINT	TE			2018-12-25 00:00:00	
Totals						0.00	0.00									0		

Seq. # ObsID Expo

mark one (all) of these boxes to select the observations for the download.
An archive (.tar) file will be prepared for the download. This contains both primary and secondary datasets needed for immediate use for scientific purposes or complete reprocessing using the most up-to-date calibrations and CIAO tools

Details of the observation: instrument setup, CCDs in use, abstract of the proposal, pipeline-processed products, etc.

Observation ID: **14990**

Add to Retrieval List

- [x] Primary package
- [x] Secondary package
- [ ] Custom selection

- Summary
- Details
- V&V Report
- Proposal Abstract
- Images
- Data packages
  - Primary
  - Secondary
- External links
  - Publications
  - Processing Status
  - Sequence Summary
- Related Observations
  - By Sequence
  - By Proposal
  - By Monitor/Followup
  - By Group

Sequence Number:	702798	**Status:**	archived
Observation ID:	14990	**Proposal Number:**	14700630
Type:	GO	**Proposal Cycle:**	14
PI Name:	Perlman	**Observer:**	Perlman
Science Category:	ACTIVE GALAXIES AND QUASARS	**Joint Observatories:**	HST
Target Name:	3C 111	**Grid Name:**	
RA (J2000)**:**	04 18 21.30		
Dec (J2000)**:**	+38 01 36.00		
Instrument:	ACIS-S	**Data Mode:**	VFAINT
Grating:	NONE		
Start Date:	2013-01-10 04:29:04	**Observing Cycle:**	14
Approved Time:	127.00 ks	**Public Release Date:**	2014-01-15 01:50:57
Exposure Time:	92.10 ks		

Sequence number: six-digit number, the first one provides the category of your observations (7=AGN, 8=clusters, etc.)

X-ray archives. V. *NuSTAR*

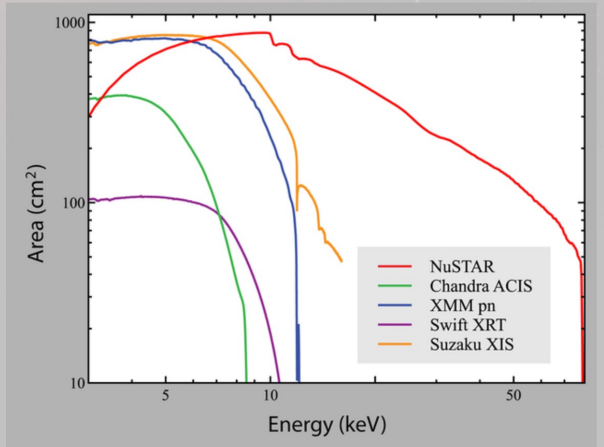
NuSTAR Bringing the High Energy Universe into Focus

About | News | Images | Videos | Education & Outreach | For Researchers

- Science Operations Center
- NuSTAR Users' Committee
- Targets of Opportunity
- For Observers
- For Proposers
- Legacy Surveys
- Publications
- Technical Publications

Researchers

The primary reference for NuSTAR is Harrison, F.A. et al. (2013; ApJ, 770, 103).

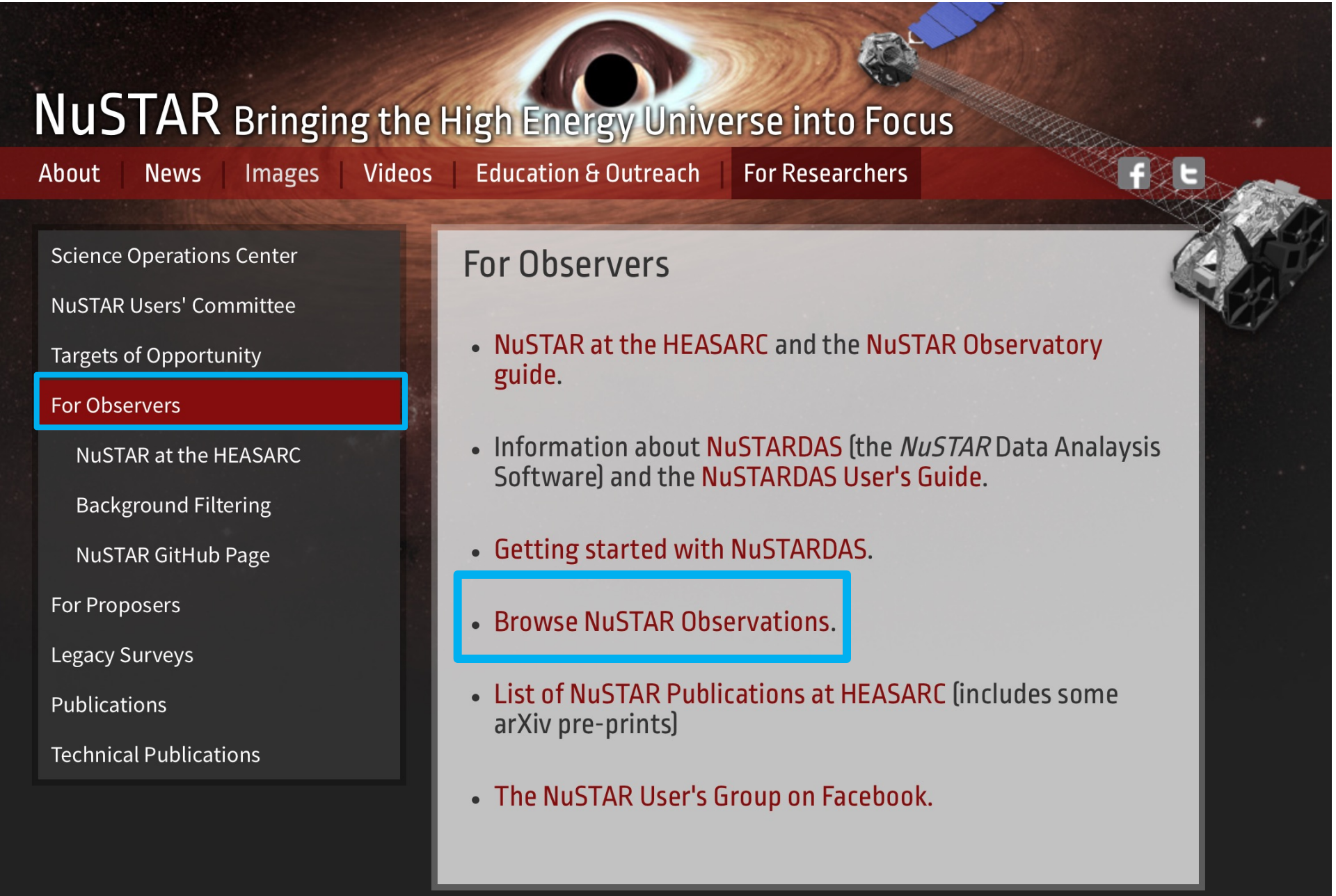


NuSTAR's effective area compared to other x-ray satellites.

Energy Band	3 - 79 keV
Angular Resolution	58" (HPD), 18" (FWHM)
Focal Plane Size	12' x 12'
Energy Resolution	0.4 keV at 6 keV, 0.9 keV at 60 keV (FWHM)
Temporal Resolution	0.1 msec
Maximum Flux Measurement Rate	10,000 cts/s
ToO response	< 24 hours
Launch date	June 13, 2012
Orbit	650 km x 610 km, 6 degree inclination
Slew Rate	0.06 deg / sec
Settle Time	142 sec

For additional information, including the As Flown Timeline (AFT), short- and long-range schedules, and list of Priority A targets, visit the Science Operations Center (SOC) website.

https://www.nustar.caltech.edu/page/observers



Description	Catalog	Data	Default Radius (arcmin)	Mission	Table Type
NuSTAR Master Catalog	numaster	Y	10	NUSTAR	Observation

1. Enter any constraints on the query below. Help on constraint syntax
(What about wildcards, spaces, and case sensitivity?)
2. To change the fields that are returned, select the box in the 'View' column beside each field desired.
3. To sort the results by any field, select one box in the 'Sort' column beside the field to sort on. Examples of query constraints:

View All	Sort	Parameter (Unit)	Query Terms	Min Value	Max Value
☑	○	name	NGC 1068	1A0535p262	gcmagnetar
☑	○	ra		00 00 00.0	23 59 20.2
☑	○	dec		-86 38 08	+85 54 59
☑	○	time		2012-07-01 21:01:07	2018-01-05 02:01:09
☑	○	obsid		00001011001	90361018001
☑	○	status		accepted	processed
☑	○	exposure_a (s)		-470000	472871
☑	○	observation_mode		SCIENCE	SLEW
☑	○	obs_type		AGN	XRB
☑	○	processing_date		2013-10-30 16:51:35	2018-01-05 19:50:05
☑	○	public_date		2013-08-29	2019-01-06
☑	○	issue_flag		0	1
☐	○	lii (degree)		0.0055	359.9951
☐	○	bii (degree)		-89.6975	89.3302
☐	○	roll_angle (degree)		0.0000	359.9081
☐	○	end_time		2012-07-01 22:36:07	2018-01-05 13:01:09
☐	○	exposure_b (s)		-470000	472222
☐	○	ontime_a (s)		0	505999
☐	○	ontime_b (s)		0	506051
☐	○	instrument_mode		CPMODE	CPMODE
☐	○	spacecraft_mode		INERTIAL	STELLAR
☐	○	slew_mode		EIGEN	POWER
☐	○	software_version		Hea_05Aug2013_V6.14_nustardas_07Oct13_v1.3.0	Hea_30Jun2014_V6.16_nustardas_28May14_v1.4.1
☐	○	prnb		0	19400282
☐		abstract		1E 161348-5055 (1E 161348), the source at the center of the supernova remnant RC	XMM and NuSTAR Observations of a New Population of Heavily Obscured AGN
☐	○	subject_category		Active galaxies and Quasars	Solar System Objects
☐	○	category_code		0	9
☐	○	priority		1	C
☐	○	pi_lname		Acero	van der Horst
☐	○	pi_fname		A	Yoshihiro
☐	○	copi_lname			
☐	○	copi_fname			
☐	○	country		USA	USA

Details of the observation

NuSTAR Master Catalog (numaster) Bulletin

Select All	Services	name	ra	dec	time	obsid	status	exposure a [s]	observation mode	obs type	processing date	public date	issue flag
	O R N S D B	NGC1068	02 42 38.1	-00 02 41	2012-12-18 16:01:07	60002030002	archived	57851	SCIENCE	OAGN	2015-05-22 10:33:30	2013-11-25	0
	O R N S D B	NGC1068	02 42 36.6	-00 02 20	2015-02-05 01:16:07	60002033004	archived	53688	SCIENCE	X13	2015-06-13 10:05:54	2016-02-26	0
	O R N S D B	NGC1068	02 42 42.8	+00 00 47	2014-08-18 11:11:07	60002033002	archived	52062	SCIENCE	X13	2015-06-13 09:26:35	2016-02-26	0
	O R N S D B	NGC1068	02 42 40.1	-00 02 07	2012-12-20 00:36:07	60002030004	archived	48560	SCIENCE	OAGN	2015-05-22 11:18:46	2013-11-25	0
	O R N S D B	NGC1068	02 42 40.4	-00 01 40	2012-12-21 08:56:07	60002030006	archived	19461	SCIENCE	OAGN	2015-05-22 11:59:39	2013-11-25	1
	D	NGC1068			2012-12-18 15:31:07	60002030001	archived	0	SLEW	OAGN	2015-06-03 05:29:53	2013-11-25	0
	D	NGC1068			2012-12-20 00:11:07	60002030003	archived	0	SLEW	OAGN	2015-06-03 05:33:37	2013-11-25	0
	O R N S D	NGC1068	02 42 40.7	-00 00 48	2012-12-21 08:30:00	60002030005	archived	0	SCIENCE	OAGN	2013-11-01 22:30:00	2013-11-25	1
	D	NGC1068			2014-08-18 10:31:07	60002033001	archived	0	SLEW	X13	2015-06-13 09:16:07	2016-02-26	0
	D	NGC1068			2015-02-05 00:46:07	60002033003	archived	0	SLEW	X13	2015-06-13 09:55:12	2016-02-26	0

10 rows retrieved from numaster

Tick the box to select

Category of the observation
SCIENCE is what you what

Expo=0: not carried out yet/still proprietary (12-month period typically)

D	NGC1068			2014-08-18 10:31:07	60002033001	archived	0	SLEW	X13	2015-06-13 09:16:07	2016-02-26	0
D	NGC1068			2015-02-05 00:46:07	60002033003	archived	0	SLEW	X13	2015-06-13 09:55:12	2016-02-26	0

10 rows retrieved from numaster

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 numaster

- **All**
- All NuSTAR Data Products (all)
- NuSTAR Auxiliary Data (aux)
- NuSTAR Science-Quality Pipeline Products (core)
- NuSTAR Complete Pipeline Products (evt)
- NuSTAR Housekeeping Data (hk)
- NuSTAR Processing Logs and Metadata (logs)
- NuSTAR Quicklook Products (ql)

Further Actions:

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

Do you want to Display all the columns for the rows selected above?

Do you want to query other services for the rows selected? (help)

Services:

NED
SIMBAD
SkyView:ROSAT All-Sky
SkyView:DSS
CoCo

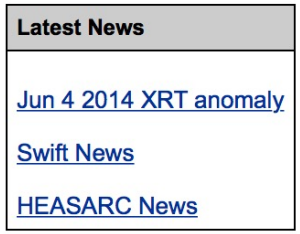
GO

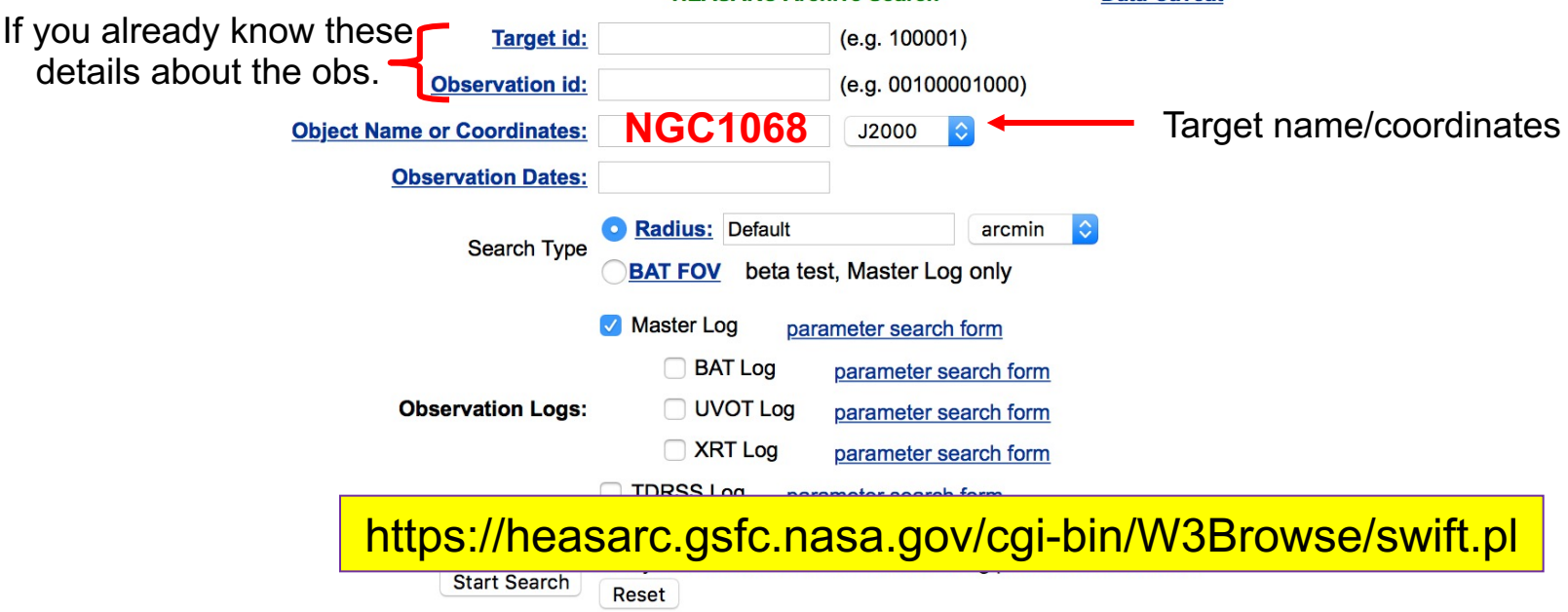
Here you decide what kind of data you want to download (you can select 'all' and then decide later whether to reprocess all from scratch

Parameter Name	Parameter Value	Unit	Description
name	NGC1068		Designation of the Pointed Source
ra	02 42 40.1		Right Ascension (Pointing Position)
dec	-00 02 07		Declination (Pointing Position)
time	2012-12-20 00:36:07		Start Time of the Observation
obsid	60002030004		Unique Observation/Sequence Number
status	archived		Observation Status (accepted, scheduled, observed, processed, archived)
exposure_a	48560	s	FPMA Effective Exposure on Source (s)
observation_mode	SCIENCE		Observation Mode
obs_type	OAGN		Type of Observation (e.g., TOO)
processing_date	2015-05-22 11:18:46		Date of Processing (TT)
public_date	2013-11-25		Public Date (TT)
issue_flag	0		Boolean Flag Indicates Known Issue within Observation
abstract	Observations of obscured and/or Compton-thick AGN with NuSTAR provide us with an opportunity to constrain the nature of X-ray obscurers that are characteristic among AGN, potentially without the powerful continuum to complicate things. The primary goal of this research line is to observe a few key objects across three obscuration regimes. These will yield detailed spectra of the reflection hump and reflector efficiency/covering fraction that can be compared against existing models of unobscured AGN.		Proposal Abstract
bii	-52.0926	degree	Galactic Latitude (Pointing Position)
caldb_version	20150316		CALDB Version Used in the Pipeline
category_code	6		Proposal Category Code
comments			General Information about Observation
coordinated			Coordinated Observation Observatories
copi_fname			Proposal Co-PI First Name
copi_lname			Proposal Co-PI Last Name
country	USA		Country of Proposal Principal Investigator or Collaboration
cycle	0		Proposal Cycle Number
data_gap	0	s	Missing Time within Observation
end_time	2012-12-21 01:51:07		Stop Time of the Observation
exposure_b	48510	s	FPMB Effective Exposure on Source (s)
instrument_mode	CPMODE		FPM Mode (CPMODE or Normal)
lii	171.9954	degree	Galactic Longitude (Pointing Position)
nupsdout	0	s	Metrology Out of Limit Time
ontime_a	52135	s	FPMA On-Source Time (s)
ontime_b	52148	s	FPMB On-Source Time (s)
pi_fname	Fiona		First Name of the Principal Investigator of the Proposal
pi_lname	Harrison		Last Name of the Principal Investigator of the Proposal
priority	1		Proposal Priority
prnb	00000000		Proposal Number
roll_angle	304.2119	degree	Roll Angle (degrees)
slew_mode	EIGEN		Slew Mode (EIGEN or POWER)
software_version	Hea_30Jun2014_V6.16_nustardas_28May14_v1.4.1		Software Version Used in the Pipeline
solar_activity			Solar Activity (e.g., Flare, CME)
spacecraft_mode	INERTIAL		Spacecraft Mode (INERTIAL or STELLAR)
subject_category	Active galaxies and Quasars		Proposal Category
title	Obscured AGN, Including Compton-Thick AGN, BALQSOs, and ULIRGs		Proposal Title

Details of each observation (first column in the previous panel)

X-ray archives. VI. *Swift*





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

Swift Master Catalog (swiftmastr) Bulletin

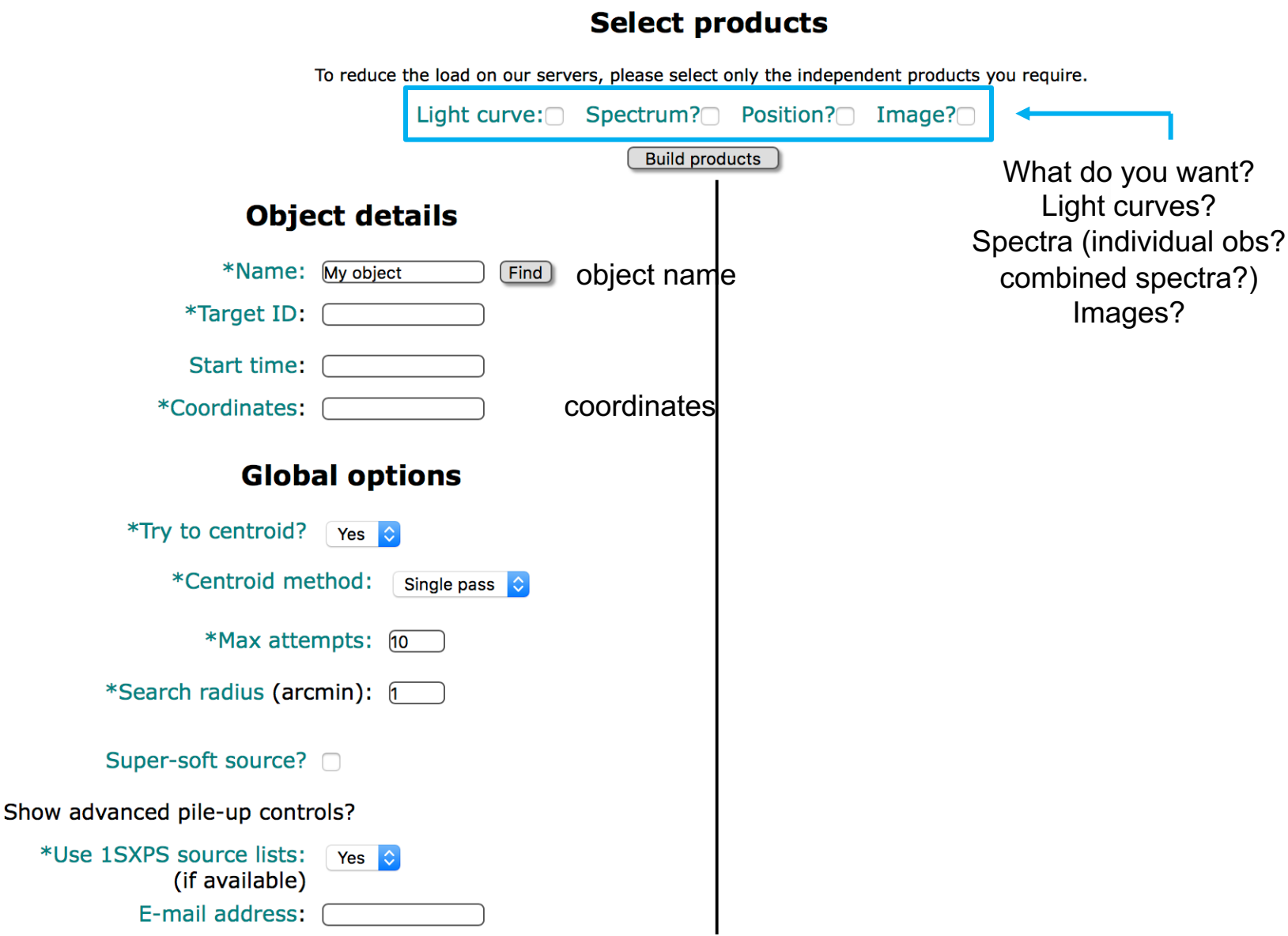
Search radius used: 25.00 '

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	MASER024240.7-0000	00037216004	02 42 46.07	-00 01 14.8	2011-07-17 01:03:00	2016-09-26	6171.7910(			7-28	1.399 (NGC 1068)
	BAT UVOT XRT	O R N S D B G	GRB140628a	00602803001	02 42 33.28	-00 22 50.2	2014-06-28 17:43:16	2014-07-08	4961.54800	4946.32300	4917.00000	2014-07-09	22.119 (NGC 1068)
	BAT UVOT XRT	O R N S D B G	GRB140628a	00602803002	02 42 42.12	-00 22 39.3	2014-06-29 03:19:09	2014-07-09	4926.23200	4762.07300	4924.00000	2014-07-10	21.860 (NGC 1068)
	BAT UVOT XRT	O R N S D B G	GRB140628a	00602803003	02 42 39.21	-00 23 28.7	2014-07-02 01:44:59	2014-07-12	4835.81200	4833.15700	4864.00000	2014-07-13	22.684 (NGC 1068)
	BAT UVOT XRT	O R N S D B	XMM-LSS3	00030954003	02 42 57.12	-00 00 57.9	2007-06-23 00:56:00	2015-06-30	3625.36800	3623.13400	3673.00000	2007-07-04	4.092 (NGC 1068)
	BAT UVOT XRT	O R N S D B	XMM-LSS3	00030954001	02 42 50.85	+00 01 16.5	2007-06-19 04:04:01	2015-07-01	3522.25800	3784.09300	3926.00000	2007-06-30	3.262 (NGC 1068)
	BAT UVOT XRT	O R N S D B	XMM-LSS3	00030954002	02 42 42.60	-00 00 48.9	2007-06-21 20:14:00	2015-07-02	3406.28500	3406.04900	3458.00000	2007-07-02	0.457 (NGC 1068)
	BAT UVOT XRT	O R N S D B	XMM-LSS3	00030954005	02 42 49.48	+00 00 47.6	2007-06-27 03:20:00	2015-07-01	3260.82300	3386.08000	3453.00000	2007-07-08	2.697 (NGC 1068)
	TDRSS BAT UVOT XRT	O R N S D B G	GRB140628a	00602803000	02 42 35.19	-00 22 13.3	2014-06-28 13:19:50	2014-07-08	3218.60800	3132.06900	6414.74700	2014-07-09	21.470 (NGC 1068)
	BAT UVOT XRT	O R N S D B	XMM-LSS3	00030954004	02 42 43.33	-00 01 04.4	2007-06-25 14:11:00	2015-07-02	2469.66300	2464.88600	2517.00000	2007-07-06	0.696 (NGC 1068)
	BAT UVOT XRT	O R N S D	NGC_1068	00088104004	02 42 37.11	-00 02 08.4	2017-10-31 14:03:57	2017-11-10	2271.42100	2270.93900	2294.00000	2017-11-11	1.624 (NGC 1068)
	BAT UVOT XRT	O R N S D B	MASER024240.7-0000	00037216001	02 42 47.48	-00 01 22.3	2011-06-28 07:29:00	2016-09-16	2120.49000	2035.82700	2173.00000	2011-07-09	1.773 (NGC 1068)
	BAT UVOT XRT	O R N S D B	NGC1068	00080252001	02 42 33.45	-00 00 11.2	2012-12-19 00:08:59	2017-06-30	2058.58900	2058.10300	2073.00000	2012-12-30	1.930 (NGC 1068)
	BAT UVOT XRT	O R N S D	NGC_1068	00088104005	02 42 35.35	-00 00 36.7	2017-11-06 08:40:57	2017-11-16	2024.87600	2024.89400	2040.00000	2017-11-17	1.367 (NGC 1068)
	BAT UVOT XRT	O R N S D B	NGC1068	00080709003	02 42 33.95	+00 01 11.7	2015-02-05 02:08:58	2015-02-15	1971.72500	1945.23500	1986.00000	2015-02-16	2.622 (NGC 1068)
	BAT UVOT XRT	O R N S D B	NGC1068	00080709001	02 42 47.02	-00 04 25.0	2014-08-18 10:52:59	2014-08-28	1899.03400	1874.19600	1912.00000	2014-08-29	3.942 (NGC 1068)
	BAT UVOT XRT	O R N S D	NGC_1068	00088104001	02 42 41.38	-00 04 25.3	2017-07-31 18:42:57	2017-08-11	1844.53800	1844.24100	1860.00000	2017-08-11	3.627 (NGC 1068)
	BAT UVOT XRT	O R N S D B	NGC1068	00080709002	02 42 31.49	-00 00 59.0	2015-02-04 21:43:59	2015-02-14	1825.29400	1798.28900	1839.00000	2015-02-15	2.327 (NGC 1068)
	BAT UVOT XRT	O R N S D	NGC_1068	00088104002	02 42 43.15	-00 00 26.2	2017-07-31 23:58:57	2017-08-11	1494.01900	1601.39500	1616.00000	2017-08-11	0.695 (NGC 1068)
	BAT UVOT XRT	O R N S D B G	GRB140628a	00602803004	02 42 51.95	-00 23 48.5	2014-07-03 03:52:33	2014-07-13	1122.32200	1114.54600	1145.00000	2014-07-14	23.180 (NGC 1068)

Query results for Swift Master Catalog

Alternatively, you may use the ASI web page: **http://swift.asdc.asi.it**

Leicester web page and tools: building *Swift*/XRT products
http://www.swift.ac.uk/user_objects/



Select products

To reduce the load on our servers, please select only the independent products you require.

Light curve: Spectrum? Position? Image?

Build products

Object details

*Name: My object Find

*Target ID:

Start time:

*Coordinates:

Global options

*Try to centroid? Yes

*Centroid method: Single pass

*Max attempts: 10

*Search radius (arcmin): 1

Super-soft source?

Show advanced pile-up controls?

*Use 1SXPS source lists: (if available) Yes

E-mail address:

Spectral details

*Use redshift? No

*Redshift:

*Use which observations?

All

Those covering times:

Those within 12 hrs of the first

Grade range: Default

*Time for spectrum: All available

If you select *Spectrum*, you can decide whether to obtain all of the spectra (combined) for that particular source or the individual spectra.
The same applies for the other available products

Bottom line: good science can be carried out also using archival data

NASA has a specific financial program to allow users to use and publish archival data and maximize the scientific return of data from satellites (expensive, so nothing should be lost)

Information about sources:
The NED (and Simbad) databases

NASA/IPAC Extragalactic Database

Home | Search Objects » | Literature » | Tools » | Services » | Information »

https://ned.ipac.caltech.edu

Object Name, coord es with search radius, etc. Go

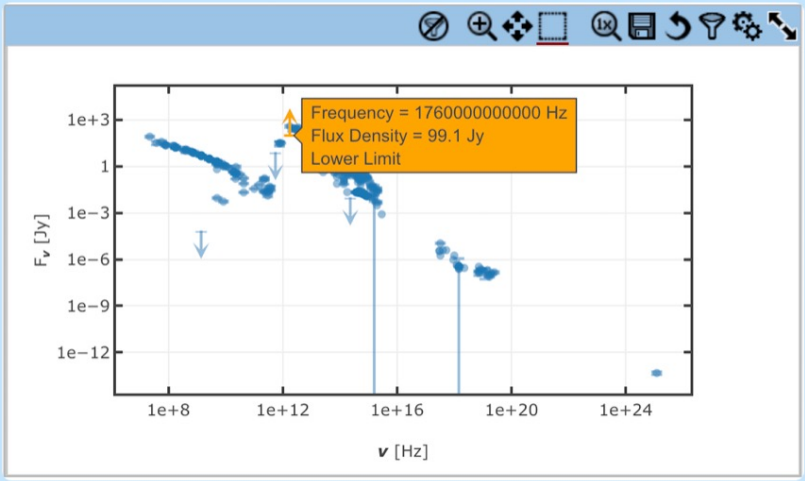
December 202 elease Highlights

Database Conter

- 1,991,875 new ect links (pointers) added to 2,125 new references.
- 92,059 new ob s from the literature, and 387,194 sources from the literature cr -identified with NED objects.
- 320,356 new re ifts added, and 30,379 more objects now having redshifts.
- 2,983,224 new otometric data points integrated into SEDs.

For further details, please visit Information » Overview » News.

- By Name
- Near Name or Position (Cone)
- In Refcode
- By Parameters



Improved SED plots

Under the "Photometry & SED" tab in By Name object search results, upward pointing arrows are added to the SED plots to indicate lower limit values from the photometry table. The example above is for NGC 1068.

NASA/IPAC Extragalactic Database

Home | Search Objects » | Literature » | Tools » | Services » | Information »

https://ned.ipac.caltech.edu

Object Name, coordinates with search radius, etc. 3C111 Go

December 2020 Release Highlights

Database Contents

- 1,991,875 new object links (pointers) added to 2,125 new references.
- 92,059 new objects from the literature, and 387,194 sources from the literature cross-identified with NED objects.
- 320,356 new redshifts added, and 30,379 more objects now having redshifts.
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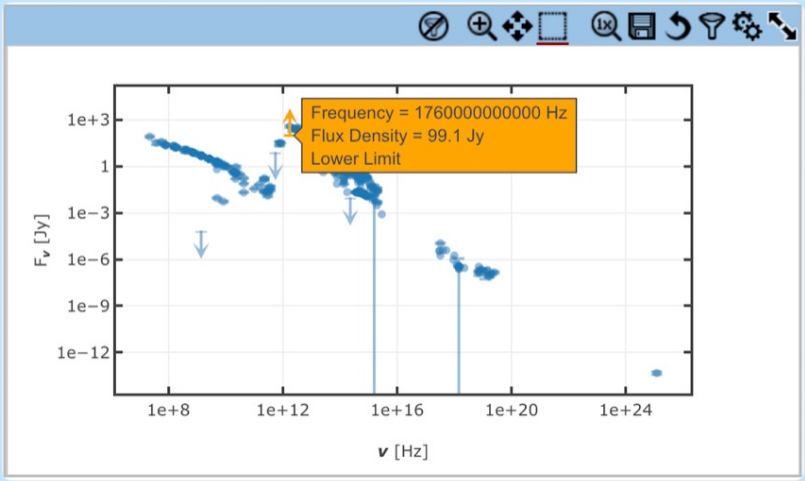
For further details, please visit Information » Overview » News.

- By Name
- Near Name or Position (Cone)
- In Refcode
- By Parameters



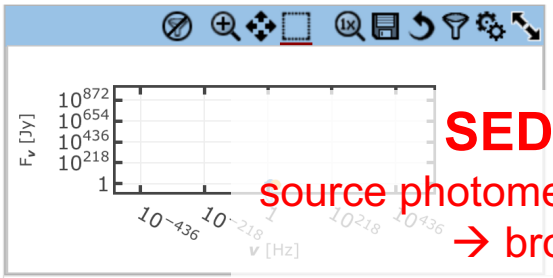
Improved SED plots

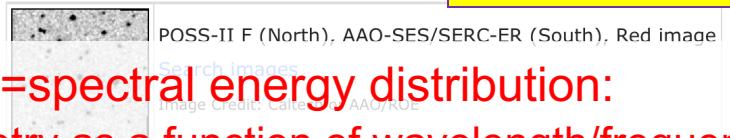
Under the "Photometry & SED" tab in By Name object search results, upward pointing arrows are added to the SED plots to indicate lower limit values from the photometry table. The example above is for NGC 1068.

Results for object 3C 111 (3c111)

Overview | Cross-IDs (51) | Coordinates (34) | Redshifts (14) | Classifications (7) | Galactic Extinctions | Notes (10) | Diameters (3) | Photometry & SED (146)
Spectra (3) | Images (97) | References (508) | External Links

NED: https://ned.ipac.caltech.edu





SED=spectral energy distribution:
source photometry as a function of wavelength/frequency
→ broad-band emission of the source

Selected data and derived quantities for 3C 111†. More information in the tabs above.

Cross-identifications				**Essential note**	
3C 111; 4C +37.12; B2 0415+37; B3 0415+379A; WISEA J041821.27+380135.7					

alternative source names

Coordinates for Preferred Position					
Equatorial (J2000)					Galactic
RA, Dec	, Dec [Deg]	Unc Semi-major,minor ["]	Unc PA [deg]	Reference	Lon, Lat [deg]
04h18m21.2772s, +38d01m35.800s	64.588655, 38.026611	4.71E-03, 3.35E-03	90	2004AJ....127.3587F	161.675559, -8.819711

coordinates

Preferred Redshift & Derived Quantities [H_0 = 67.8 km/sec/Mpc], Ωmatter = 0.308, Ωvacuum = 0.692]					**Redshift-independent Distances**
z (Helio)	V (Helio) [km/s]	Reference	V (CMB) [km/s]	Hubble Distance (CMB) [Mpc]	# Measurements
0.04850 +/- N/A	14539.936250 +/- N/A	1991ApJS...75..297H	14445 +/- 7	213.05 +/- 14.91	

redshift

Classifications					
Object Type	Morphology	Reference	Activity Type	Reference	Other
G			S1	2006A&A...455..773V	N galaxy;BLRG Sy1

Quick-look Angular & Physical Diameters				**Foreground Galactic Extinction (2011ApJ...737..103S)**	
Passband	Diameter ["]	Reference	Diameter [kpc]	A_λ [mag] V	A_λ [mag] K
K_s (2MASS "total")	61.60	20032MASX.C.....:	63.18	4.531	0.499

Quick-look Photometry & Luminosities (brightest flux in each spectral region)					
Spectral region	Band	Apparent mag or flux	Reference	Absolute Mag or νL_ν [W]	νL_ν [$L_\odot$(bol)]
X-Ray	15-150 keV (Swift)	1.1e-10 +/- 3.4e-12 erg/cm^2^/s	2010A&A...524A..64C	6.42E+37 +/- 1.30E+37 [W]	1.67E+11 +/- 3.38E+10
UV					
Visible	i (KPNO)	13.960 mag	2011ApJ...739...57K	-2.28E+01 [mag]	3.85E+10
Near-IR	W2 (WISE)	8.996 +/- 0.021 mag	2013wise.rept....1C	-27.72 +/- 0.50 [mag]	4.28E+10 +/- 8.59E+09
Far-IR	70 microns	342 +/- 100 milliJy	2005ApJ...629...88S	8.38E+36 +/- 2.97E+36 [W]	2.18E+10 +/- 7.72E+09
Radio	12.6 MHz	600. +/- 15 % Jy	1969MNRAS.143..289B	4.41E+34 +/- 1.10E+34 [W]	1.15E+08 +/- 2.87E+07

Photometry

†Derived quantities are based on the median redshift-independent distance when available, otherwise the preferred redshift is used with the selected cosmological parameters (which can be changed in search options).
Cosmological params can be changed in search options.

also the references of the original papers where data were published are reported

Portal | Simbad | VizieR | Aladin | X-Match | Other | Help

SIMBAD Astronomical Database - CDS (Strasbourg)

http://simbad.u-strasbg.fr/simbad/

SIMBAD Astronomical Database - CDS (Strasbourg)

What is SIMBAD ?

Queries	Documentation	Information
basic search	**User's guide**	Presentation
by identifier		
by coordinates		Image thumbnails
by criteria	Query by urls	
reference query	Nomenclature Dictionary	**BETA - Mobile version**
scripts	Object types	
TAP queries	List of journals	SimWatch
	Measurement description	
options	Spectral type coding	Release:
	User annotations documentation	SIMBAD4 1.7 - May-2018
Display all user annotations	Acknowledgment	Release history

basic search

Content	Basic search

SIMBAD: basic query

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

basic query : 3C111

identifier, coordinates (radius=10 arcmin), or bibcode

SIMBAD search | clear | help

Install the Simbad basic search in your tool bar

Basic data :

3C 111 -- Seyfert 1 Galaxy

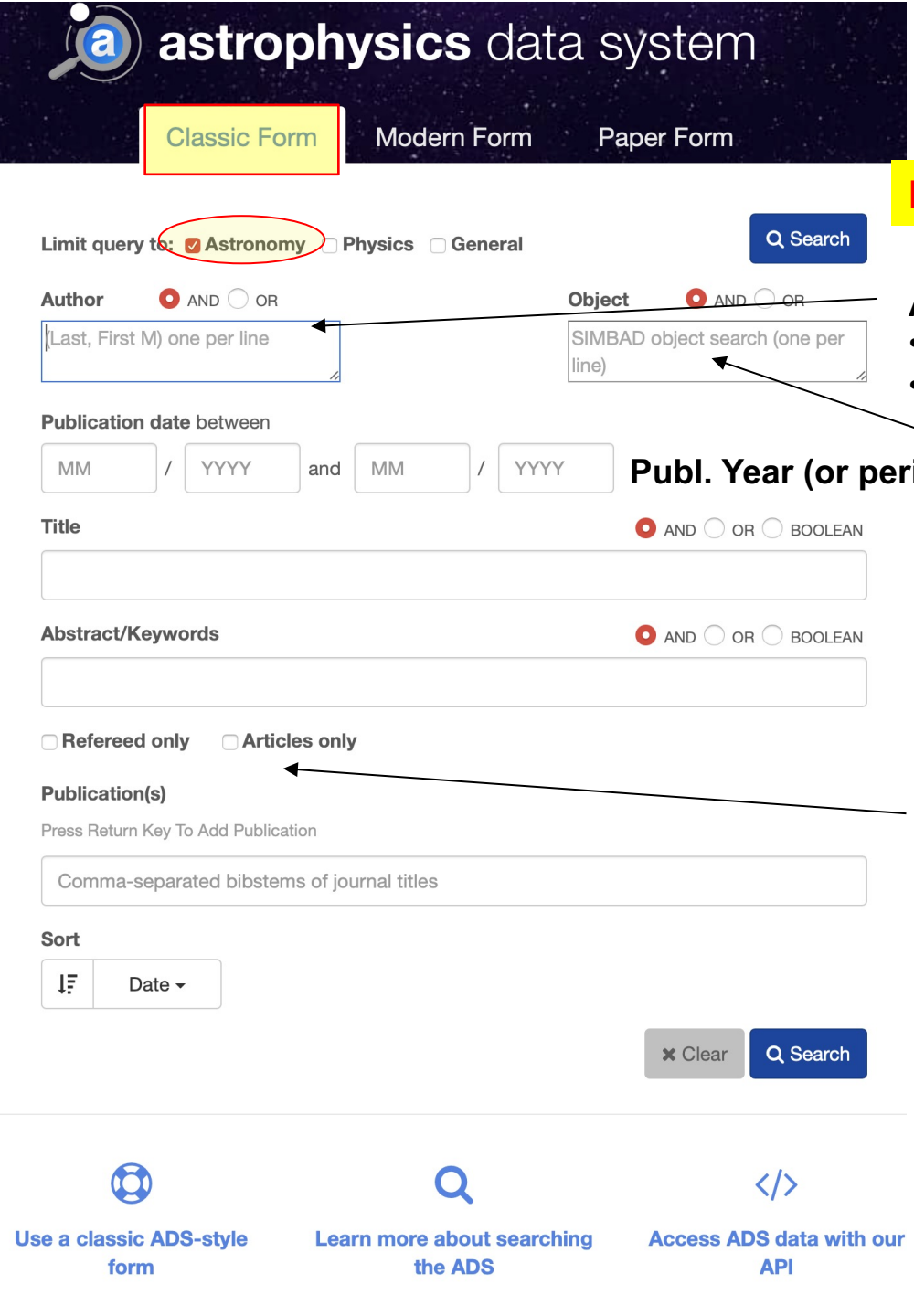
Other object types:	**Rad** (ICRF,ASB,...), **X** (3A,2E,...), **AGN** ([HB91],[VV2000c],...), **gam** (1FGL,3FGL,...), **QSO** (2016A&A, (JCMTSE,JCMTSF), **IR** (2MASS,WISE), * (Gaia), **mm** ([HFG2013])
ICRS coord. *(ep=J2000) :*	**04 18 21.2773655604 +38 01 35.801523843 (Optical) [0.1226 0.0637 90] A 2018yCat.1345....0G**
FK4 coord. *(ep=B1950 eq=1950) :*	04 15 00.6120764453 +37 54 19.219372956 [0.1226 0.0637 90]
Gal coord. *(ep=J2000) :*	161.6755351004584 -08.8197805157057 [0.1226 0.0637 90]
Proper motions *mas/yr* :	**-0.145 -0.129 [0.257 0.147 90] A 2018yCat.1345....0G**
Radial velocity / Redshift / cz :	**V(km/s) 14615 [~] / z(spectroscopic) 0.05 [~] / cz 14990 [~] (Opt) D 2017ApJS..233....3T**
Morphological type:	**E D 2012AstL...38..475K**
Angular size *(arcmin)*:	**0.250 0.200 20 (NIR) C 2006AJ....131.1163S**
Fluxes (6) :	**B 19.75 [~] D 2010A&A...518A..10V** **V 18.05 [~] D 2010A&A...518A..10V** **G 17.2860 [0.0032] C 2018yCat.1345....0G** **J 13.633 [0.142] D 2006AJ....131.1163S** **H 12.540 [0.129] D 2006AJ....131.1163S** **K 11.383 [0.066] C 2006AJ....131.1163S**

Articles

Besides the individual journal webpages, you can retrieve articles and additional information (e.g., tables, figures) using **ADS** and **arXiv**

I. ADS

http://adsabs.harvard.edu/abstract_service.html



Author(s)

- ^Name: all the papers with Name as first author
- Name1 & Name 2: all the papers in given years with both Name1 and Name2

Publ. Year (or period)

Object Name

It works with boolean logic

You may decide whether to include either all of the publications or only those which are refereed

You may retrieve the bibliography in the proper format for different journals

II. ArXIV

https://arxiv.org

Physics

- Astrophysics (**astro-ph** new, recent, search)
  includes: Astrophysics of Galaxies; Cosmology and Nongalactic Astrophysics; Earth and Planetary Astrophysics
- Condensed Matter (**cond-mat** new, recent, search)
  includes: Disordered Systems and Neural Networks; Materials Science; Mesoscale and Nanoscale Physics; Other
- General Relativity and Quantum Cosmology (**gr-qc** new, recent, search)
- High Energy Physics - Experiment (**hep-ex** new, recent, search)
- High Energy Physics - Lattice (**hep-lat** new, recent, search)
- High Energy Physics - Phenomenology (**hep-ph** new, recent, search)
- High Energy Physics - Theory (**hep-th** new, recent, search)
- Mathematical Physics (**math-ph** new, recent, search)
- Nonlinear Sciences (**nlin** new, recent, search)
  includes: Adaptation and Self-Organizing Systems; Cellular Automata and Lattice Gases; Chaotic Dynamics; Ex
- Nuclear Experiment (**nucl-ex** new, recent, search)
- Nuclear Theory (**nucl-th** new, recent, search)
- Physics (**physics** new, recent, search)
  includes: Accelerator Physics; Applied Physics; Atmospheric and Oceanic Physics; Atomic Physics; Atomic and M
  Physics; Geophysics; History and Philosophy of Physics; Instrumentation and Detectors; Medical Physics; Optics
- Quantum Physics (**quant-ph** new, recent, search)

Mathematics

- Mathematics (**math** new, recent, search)
  includes (see detailed description): Algebraic Geometry; Algebraic Topology; Analysis of PDEs; Category Theory
  Mathematics; General Topology; Geometric Topology; Group Theory; History and Overview; Information Theory
  Quantum Algebra; Representation Theory; Rings and Algebras; Spectral Theory; Statistics Theory; Symplectic G

Computer Science

- Computing Research Repository (**CoRR** new, recent, search)
  includes (see detailed description): Artificial Intelligence; Computation and Language; Computational Complex
  Computers and Society; Cryptography and Security; Data Structures and Algorithms; Databases; Digital Librarie
  Hardware Architecture; Human-Computer Interaction; Information Retrieval; Information Theory; Logic in Com
  Numerical Analysis; Operating Systems; Other Computer Science; Performance; Programming Languages; Robo

Quantitative Biology

- Quantitative Biology (**q-bio** new, recent, search)
  includes (see detailed description): Biomolecules; Cell Behavior; Genomics; Molecular Networks; Neurons and C

Quantitative Finance

- Quantitative Finance (**q-fin** new, recent, search)
  includes (see detailed description): Computational Finance; Economics; General Finance; Mathematical Finance

Statistics

- Statistics (**stat** new, recent, search)
  includes (see detailed description): Applications; Computation; Machine Learning; Methodology; Other Statistic

Electrical Engineering and Systems Science

On **daily basis** you may find the submitted/accepted publications, proceedings, research notes, etc.

You can mine in the old submissions ('*search*', '*recent*') or just check the papers newly submitted to arXiv

November 15, 2019 (under ‘New Submissions’, Astrophysics Sector

You can download PDF (or other formats)

[15] arXiv:1911.05791 [pdf, other]

The Assembly of the First Massive Black Holes

Kohei Inayoshi, Eli Visbal, Zoltán Haiman

Comments: Invited review in Annual Reviews of Astronomy & Astrophysics; an edited final version is to appear in volume 58, to be published in 2020
Subjects: **Astrophysics of Galaxies (astro-ph.GA)**; Cosmology and Nongalactic Astrophysics (astro-ph.CO)

The existence of ≈10^9 Msun supermassive black holes (SMBHs) within the first billion year of the universe has stimulated numerous ideas for the prompt formation and r
first assembled, how they may have subsequently grown as massive as ≈10^9 Msun, and how multi-messenger observations could distinguish between different SMBH ass
of the iceberg. Early BHs likely fill a continuum from stellar-mass (approx. 10 Msun) to the super-massive (≈10^9 Msun) regime, reflecting a range of initial masses and gr
high as z=30, but their initial growth was typically stunted due to the shallow potential wells of their host galaxies. (3) Conditions in some larger, metal-poor galaxies soo
mergers in dense stellar clusters. (4) BH masses depend on the environment (such as the number and properties of nearby radiation sources and the local baryonic streami
between assembly mechanisms will be difficult, but a combination of observations by LISA (probing massive BH growth via mergers) and by deep multi-wavelength electror