



# High Energy INAF Science Archives

**Matteo Perri**  
**(INAF-OAR & ASI-SSDC)**

On behalf of Massimo Cappi (INAF UTG-III)



# TALK OUTLINE

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- Description of **INAF UTG-III** National Division
- The **Space Science Data Center (SSDC)**
- Overview of **INAF Archives** for High Energy Astrophysics



# INAF UTG-III NATIONAL DIVISION

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## INAF UTG-III:

- National Division for **High Energy Astrophysics** of the INAF Scientific Directorate

**High Energy:** X-ray + Gamma-ray energy bands (from **0.1 keV** to **300 TeV**)

## INAF UTG-III Projects can be divided in:

- Space Missions (e.g. ASI, ESA, NASA)
- Ground-based Observatories (Cherenkov Telescopes)

## These include:

- Past Observatories (**archive-based** science)
- On-going observatories (**present** and hopefully **>2025** time frame)
- Future Observatories: **>2025** time frame



# INAF UTG-III PROJECTS (1)

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## Past and present High Energy **Space Missions**:

- *BeppoSAX* (X-rays, ASI)
- Chandra (X-rays, NASA)
- XMM-Newton (X-rays, ESA)
- INTEGRAL (Hard X-rays, ESA)
- Swift (X-rays, NASA)
- NuSTAR (Hard X-rays, NASA)
- AGILE (Gamma-rays, ASI)
- Fermi (Gamma-rays, NASA)



# INAF UTG-III PROJECTS (1)

## Past and present High Energy **Space Missions**:

- **BeppoSAX**

(X-rays, ASI) (Ground Segment)

- Chandra

(X-rays, NASA)

- XMM-Newton

(X-rays, ESA) (EPIC Co-I, calibration)

- **INTEGRAL**

(Hard X-rays, ESA) (IBIS PI, SPI Co-I)

- **Swift**

(X-rays, NASA) (data analysis software, X-ray optics)

- **NuSTAR**

(Hard X-rays, NASA) (data analysis software, calibration)

- **AGILE**

(Gamma-rays, ASI) (PI, Ground Segment)

- **Fermi**

(Gamma-rays, NASA) (data analysis software, calibration)

Major role of INAF in science archives management



# INAF UTG-III PROJECTS (2)

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## Future High Energy **Space Missions**:

- IXPE (X-rays polarimetry, NASA)
- ATHENA (X-rays, ESA)
- Theseus (Hard X-rays, ESA)
- Hermes (Hard X-rays, ASI)
- eXTP (Hard X-rays, ASI)
- SVOM (Hard X-rays), CAS-CNES)

## Present and future (Very) High Energy **Ground Telescopes**:

- MAGIC (TeV)
- ASTRI/Mini Array (TeV)
- CTA (TeV)



# INAF UTG-III PROJECTS (2)

## Future High Energy **Space Missions:**

- **IXPE** (X-rays polarimetry, NASA) (data analysis sw, detectors, calibration)
- ATHENA (X-rays, ESA) (X-IFU Co-I, calibration)
- Theseus (Hard X-rays, ESA) (PI, XGIS instrument)
- **Hermes** (Hard X-rays, ASI) (PI)
- eXTP (Hard X-rays, ASI)
- SVOM (Hard X-rays), CAS-CNES)

## Present and future (Very) High Energy **Ground Telescopes:**

- MAGIC (TeV)
- **ASTRI/Mini Array** (TeV) (optics, detector, data analysis software)
- **CTA** (TeV) (data analysis software)

Major role of INAF in science archives management



# THE SPACE SCIENCE DATA CENTER (SSDC)

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INAF UTG-III archive activities for High Energy Astrophysics based at the SSDC

The **Space Science Data Center** (SSDC): Research Infrastructure managed by the Italian Space Agency (**ASI**) together with **INAF** and **INFN**



# THE SPACE SCIENCE DATA CENTER (SSDC)

## INAF UTG-III archive activities for High Energy Astrophysics based at the SSDC

The **Space Science Data Center** (SSDC): Research Infrastructure managed by the Italian Space Agency (**ASI**) together with **INAF** and **INFN**

SSDC main mission:

- acquire, manage, process and distribute data from (mainly) space based mission (scientific data return enhancement)
- ensure long term preservation of archives



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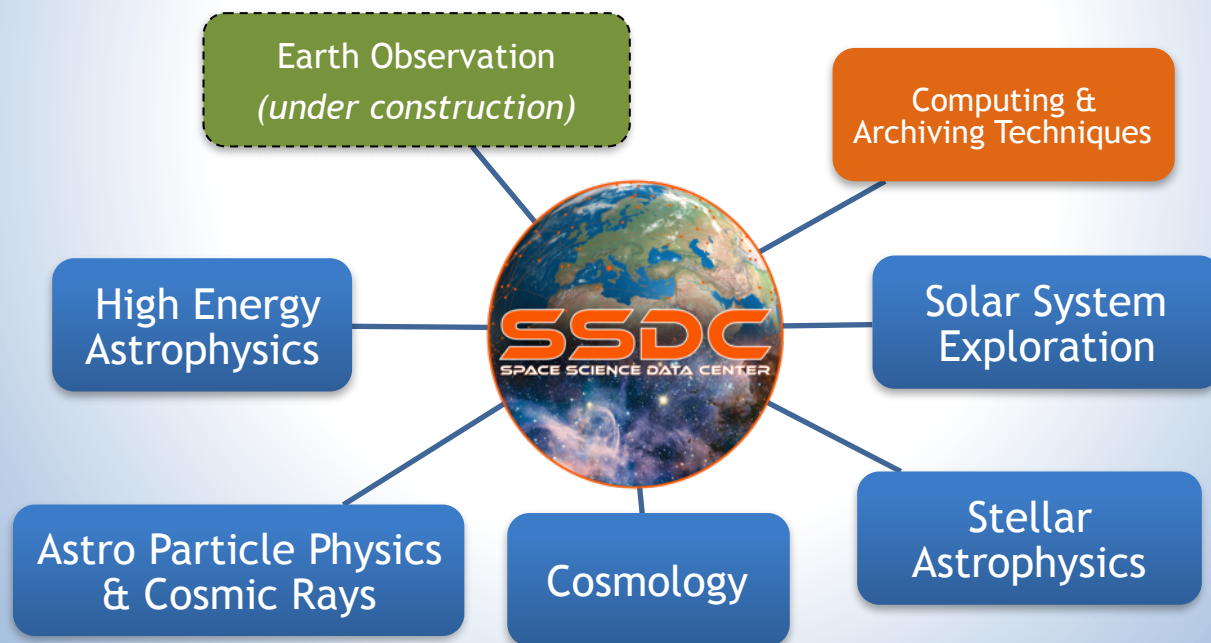
Founded in **2000** (formerly ASDC) after the experience acquired by the **BeppoSAX Science Data Centre** in 1990s.

Operational scientific support to more than **25 space missions** (significant fraction of high energy astrophysics missions)



# THE SSDC SCIENTIFIC EXPERTISE

SSDC team involves around 40 people: **scientists** from ASI, INAF, INFN and **SW engineers** from Telespazio & SERCO, expert in different fields.

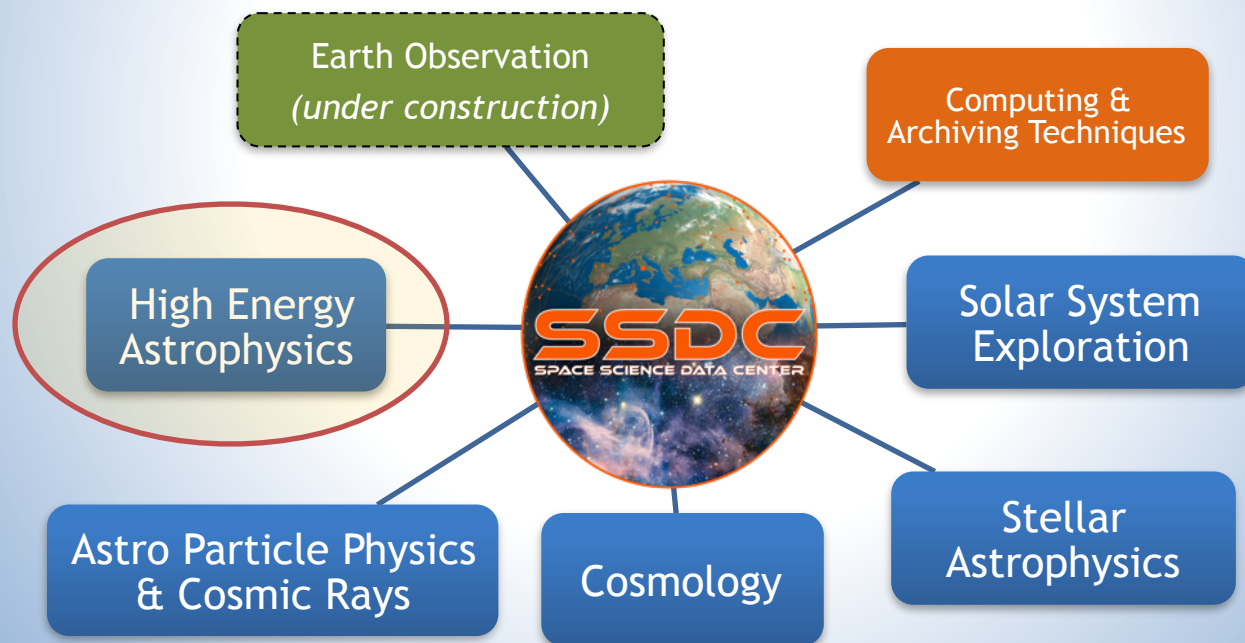


**Effective approach:** Developers and Users belong to same communities.



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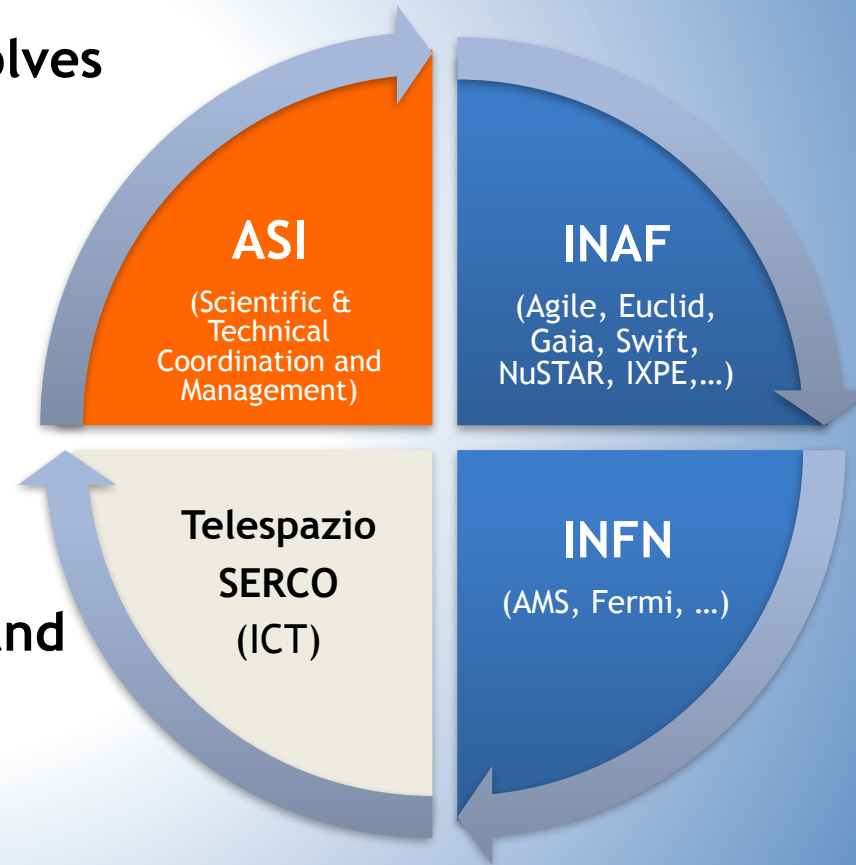


# THE SSDC ORGANIZATION

SSDC management and organization involves several Research Institutes:

- **ASI - Italian Space Agency**
- **INAF - National Institute for Astrophysics**
- **INFN - National Institute for Nuclear Physics**

Industries are involved for Information and Communication Technology supports.



Over **15 INAF-OAR scientists** operating at the SSDC (including **9 staff**)

# THE SSDC SCIENCE GATEWAY



The screenshot shows the homepage of the Space Science Data Center (SSDC). At the top, there is a navigation bar with links: Home, About SSDC, News and Communication, Quick Look, Missions, Multimission Archive, Catalogs, Tools, Links, and Bibliographic services. Below this is a secondary navigation bar with Helpdesk and Privacy, and social media icons for Facebook and Twitter. The main content area features a large, vibrant image of a galaxy or nebula on the left. On the right, there is a grid of icons representing various space missions, including AGILE, SWIFT, FERMI, NUSTAR, AMS-02, PLANCK, SOLAR SYSTEM, PAMELA, GAIA, HERSCHEL, BEPPO, SIMBOL X, CHEOPS, EUCLID, and PLATO. At the bottom, there is a row of icons for specific tools and databases: SED BUILDER, SKY EXPLORER, MATISSE, GAIA PORTAL, COSMIC RAY DATABASE, SSDC MULTIMISSIION ARCHIVE FOR SPACE SCIENCE, SSDC CATALOGS, SSDC BIBLIOGRAPHY TOOL, and AGILE-LV3 data analysts.

Science Tools for  
on-line access  
to data in a  
multifrequency  
environment

On-line Access  
to Space  
Missions  
Data Archives



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Science Tools for  
on-line access  
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## Space Science Data Center



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### Multi-Mission Interactive Archive for Space Science Astrophysics/Cosmology

#### Astrophysics/Cosmology

**all missions** ☒

**Radio-Micro wave** ☒

- ☒ Planck

**IR-Optic-UV** ☒

- ☒ Herschel
- ☒ Swift-UVOT

**X ray** ☒

- ☒ ASCA
- ☒ BeppoSAX
- ☒ Einstein
- ☒ Exosat
- ☒ NuSTAR
- ☒ ROSAT
- ☒ Swift-XRT

**Gamma ray** ☒

- ☒ Agile
- ☒ Agile-LV3
- ☒ Egret
- ☒ Fermi
- ☒ Swift-BAT

#### Exploration of the Solar System

**all missions** ☐

- ☐ Rosetta
- ☐ Dawn
- ☐ Chang'E 1
- ☐ Chang'E 2
- ☐ Messenger

#### Particle Astrophysics Cosmic rays


**all missions** ☐

- ☐ AMS-01
- ☐ AMS-02
- ☐ BESS-Polar I
- ☐ BESS-Polar II
- ☐ CALET
- ☐ CREAM
- ☐ Fermi-LAT
- ☐ Pamela
- ☐ TS93
- ☐ Chang'E 1 (soon available)
- ☐ Chang'E 2 (soon available)


#### Atmospheric Physics TGF

**all missions** ☐

- ☐ Agile



## Space Science Data Center



Home About SSDC News and Communication Quick Look Missions Multimission Archive Catalogs Tools Links Bibliographic services  
Helpdesk Privacy

**Multi-Mission Interactive Archive for Space Science**  
**Astrophysics/Cosmology**

**Astrophysics/Cosmology**

all missions ☒

**Radio-Micro wave** ☒

☒ Planck

**IR-Optic-UV** ☒

☒ Herschel  
☒ Swift-UVOT

**X ray** ☒

☒ ASCA  
☒ BeppoSAX  
☒ Einstein  
☒ Exosat  
☒ NuSTAR  
☒ ROSAT  
☒ Swift-XRT

**Gamma ray** ☒

☒ Agile  
☒ Agile-LV3  
☒ Egret  
☒ Fermi  
☒ Swift-BAT

**Exploration of the Solar System**

all missions ☐

☐ Rosetta  
☐ Dawn  
☐ Chang'E 1  
☐ Chang'E 2  
☐ Messenger

**Particle Astrophysics Cosmic rays**

all missions ☐

☐ AMS-01  
☐ AMS-02  
☐ BESS-Polar I  
☐ BESS-Polar II  
☐ CALET  
☐ CREAM  
☐ Fermi-LAT  
☐ Pamela  
☐ TS93  
☐ Chang'E 1 (soon available)  
☐ Chang'E 2 (soon available)

**Atmospheric Physics TGF**

all missions ☐

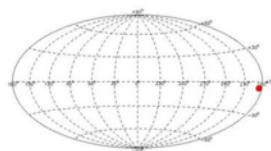
☐ Agile



# THE SSDC MULTI-MISSION ARCHIVE

## Multi-Mission Interactive Archive

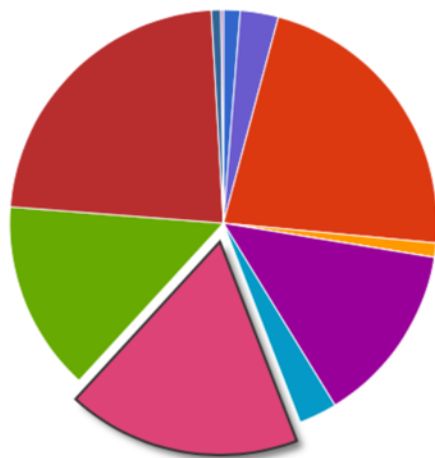
Query results for: **CRAB**  
RA = **83.63321** (deg); DEC = **22.01447** (deg); EQUINOX = **2000**  
Source name resolved by **SSDC**



Source Names

Bibliographic search ?

PKSB0531+219 ?  
in time range between 1900 and 2019  
By name via NED  
By coordinates via ADS



**SWIFT**  
98 entries (18%)

| MISSION      | ENTRIES |
|--------------|---------|
| ASCA         | 7       |
| BeppoSax NFI | 16      |
| BeppoSax WFC | 124     |
| EINSTEIN     | 6       |
| EXOSAT       | 0       |
| NUSTAR       | 76      |
| ROSAT        | 16      |
| SWIFT        | 98      |
| AGILE        | 80      |
| AGILE-LV3    | 127     |
| EGRET        | 4       |
| FERMI        | 1       |

- **Uniform User Interface**
- **Direct Data Access**
- **Preview of High Level Data Products**
- **On-line Interactive Scientific Analysis tools to enhance the data scientific return**





## **BeppoSAX**

- 1996 - 2002
- X-Ray and Gamma-Ray Astrophysics

Archive available at the SSDC since beginning of the mission

- About **1,500** pointed observations
- Scientific data for both Narrow Field Instruments (**LECS**, **MECS**, **PDS**, **HPGSPC**) and Wide Field Cameras (**WFC**)
- Standard Scientific Analysis Preview (images, spectra, light-curves)
- **Interactive Analysis Tools** for LECS and MECS instruments

# BEPPOSAX SCIENCE ARCHIVE

| Entry number  |                    | Archive     | Interactive Analysis |                       | Target Name     | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | obs_code   | start_date |
|---|--------------------|-------------|----------------------|-----------------------|-----------------|--------------------------|---------------------------|------------|------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                    |             |                      |                       | ↑ ↓             | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats  | ↑ ↓ Stats  |
| 1 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab (calibrati | 05 34 31.79              | +22 00 51.01              | 3028100110 | 1997-04-11 |
| 2 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3050100200 | 1998-10-13 |
| 3 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB            | 05 34 31.9               | +22 00 51.01              | 3102300300 | 1999-09-25 |
| 4 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3003400100 | 1997-10-08 |
| 5 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3102300100 | 1999-03-09 |
| 6 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3028100200 | 1996-08-31 |
| 7 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab_2001_NFI   | 05 34 31.9               | +22 00 51.01              | 2079501400 | 2001-09-28 |
| 8 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 2027500100 | 1996-09-06 |
| 9 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3102300200 | 1999-09-25 |
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| 12 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB_CAL_NFI    | 05 34 31.9               | +22 00 51.01              | 3102300400 | 2000-04-10 |
| 13 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB_cal_NFI    | 05 34 31.9               | +22 00 51.01              | 3105100200 | 2000-10-01 |
| 14 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab_2001_NFI   | 05 34 31.9               | +22 00 51.01              | 3139100100 | 2001-09-28 |

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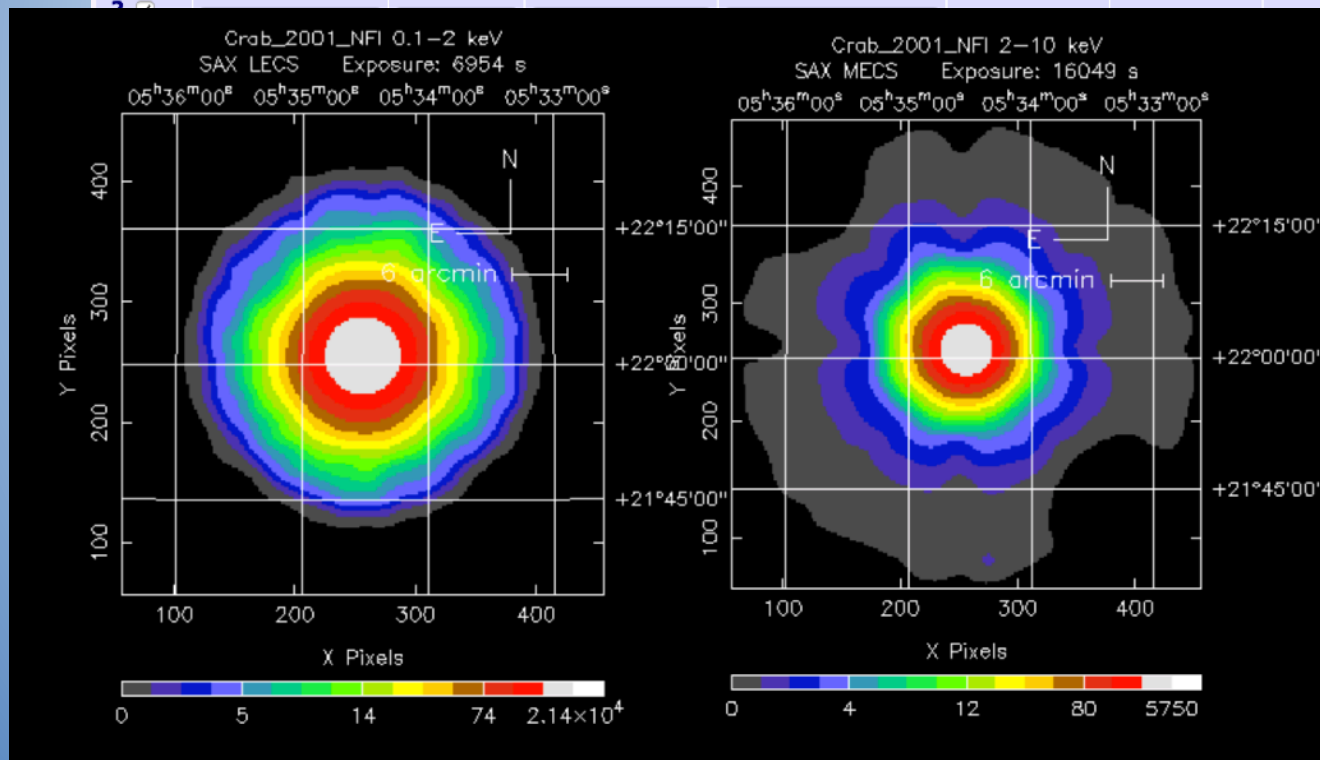
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| 1 <input checked="" type="checkbox"/><br><div>Select</div>            | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab (calibrati | 05 34 31.79                | +22 00 51.01                | 3028100110           | 1997-04-11           |



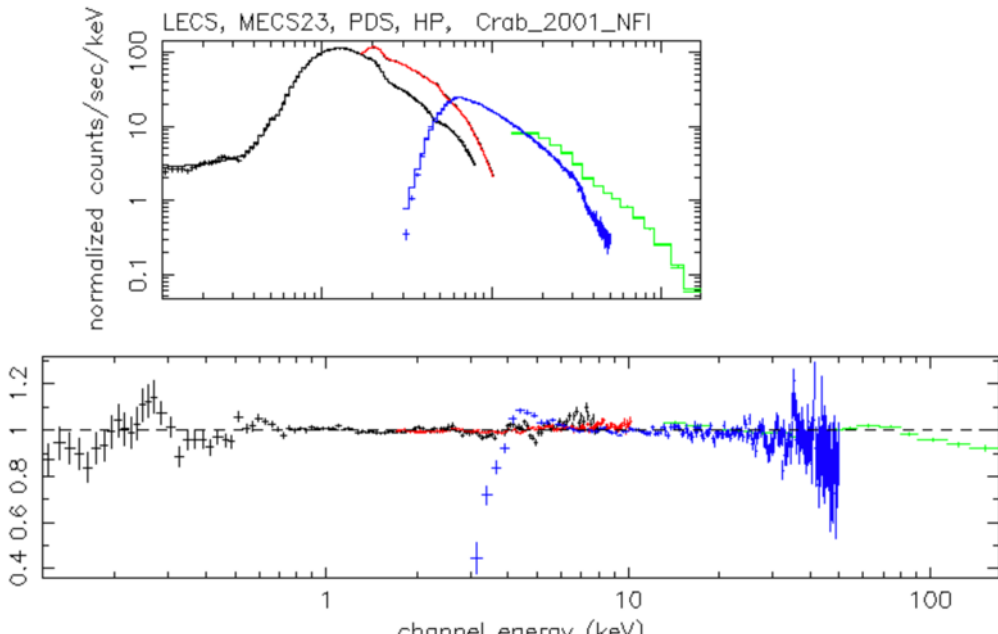
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|---------|------------|------------|
| 0 51.01 | 3050100200 | 1998-10-13 |
| 0 51.01 | 3102300300 | 1999-09-25 |
| 0 51.01 | 3003400100 | 1997-10-08 |
| 0 51.01 | 3102300100 | 1999-03-09 |
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| 0 51.01 | 3050100100 | 1998-04-06 |
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|---|--------------------|-------------|----------------------|-----------------------|--------------------------|---------------------------|--------------|-----------------------|
| Selection mode:                         |                    |             |                      | ↑ ↓                   | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats    | ↑ ↓ Stats             |
| Include                                 |                    |             |                      |                       |                          |                           |              |                       |
| <input checked="" type="checkbox"/> All |                    |             |                      |                       |                          |                           |              |                       |
| 1 <input checked="" type="checkbox"/>   | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab (calibrati          | 05 34 31.79               | +22 00 51.01 | 3028100110 1997-04-11 |
| 2 <input checked="" type="checkbox"/>   | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab                     | 05 34 31.9                | +22 00 51.01 | 3050100200 1998-10-13 |
| 3 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3102300300 1999-09-25 |
| 4 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3003400100 1997-10-08 |
| 5 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3102300100 1999-03-09 |
| 6 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3028100200 1996-08-31 |
| 7 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 2079501400 2001-09-28 |
| 8 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 2027500100 1996-09-06 |
| 9 <input checked="" type="checkbox"/>   | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3102300200 1999-09-25 |
| 10 <input checked="" type="checkbox"/>  | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3050100100 1998-04-06 |
| 11 <input checked="" type="checkbox"/>  | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3028100100 1996-08-31 |
| 12 <input checked="" type="checkbox"/>  | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3102300400 2000-04-10 |
| 13 <input checked="" type="checkbox"/>  | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3105100200 2000-10-01 |
| 14 <input checked="" type="checkbox"/>  | SSDC Data Ex       |             |                      |                       |                          |                           |              | 3139100100 2001-09-28 |

BeppoSAX Supervised Standard Scientific Analysis  
data and folded model  
LECS, MECS23, PDS, HP, Crab\_2001\_NFI



# BEPPOSAX SCIENCE ARCHIVE

| Entry number    |   | Archive            | Interactive Analysis |                      | Target Name           | RA (J2000) | Dec (J2000) | obs_code | start_date |
|-----------------|---|--------------------|----------------------|----------------------|-----------------------|------------|-------------|----------|------------|
|                 |   |                    |                      |                      |                       | hh mm ss.d | dd mm ss.d  |          |            |
| Selection mode: |   |                    |                      |                      |                       | ↑ ↓        |             |          |            |
| Include         |   |                    |                      |                      |                       |            |             |          |            |
| ✓ All           |   |                    |                      |                      |                       |            |             |          |            |
| 1               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab (c    |             |          |            |
| 2               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 3               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | CRAB       |             |          |            |
| 4               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 5               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 6               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 7               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab_20    |             |          |            |
| 8               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 9               | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 10              | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 11              | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab       |             |          |            |
| 12              | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | CRAB_C     |             |          |            |
| 13              | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | CRAB_c     |             |          |            |
| 14              | ✓ | SSDC Data Explorer | Data Access          | Interactive Analysis | SSDC Products Preview | Crab_20    |             |          |            |

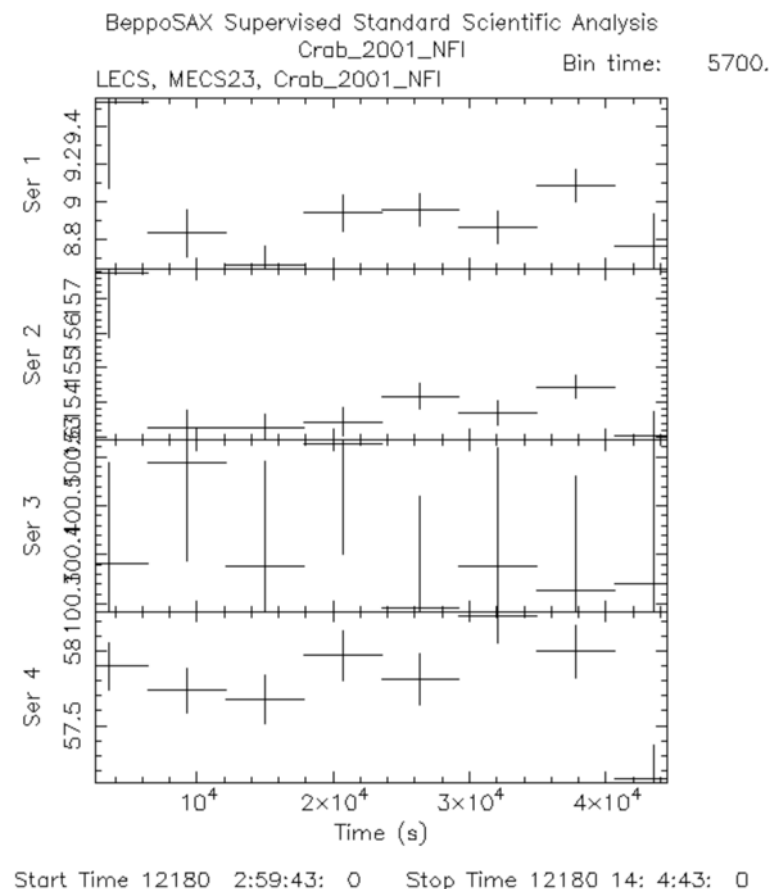
BeppoSAX Supervised Standard Scientific Analysis

Crab\_2001\_NFI

LECS, MECS23, Crab\_2001\_NFI

Bin time: 5700

Start Time 12180 2:59:43: 0 Stop Time 12180 14: 4:43: 0





# BEPPOSAX SCIENCE ARCHIVE

| Entry number  |                    | Archive     | Interactive Analysis |                       | Target Name     | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | obs_code   | start_date |
|---|--------------------|-------------|----------------------|-----------------------|-----------------|--------------------------|---------------------------|------------|------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                    |             |                      |                       | ↑ ↓             | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats  | ↑ ↓ Stats  |
| 1 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab (calibrati | 05 34 31.79              | +22 00 51.01              | 3028100110 | 1997-04-11 |
| 2 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3050100200 | 1998-10-13 |
| 3 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB            | 05 34 31.9               | +22 00 51.01              | 3102300300 | 1999-09-25 |
| 4 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3003400100 | 1997-10-08 |
| 5 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3102300100 | 1999-03-09 |
| 6 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3028100200 | 1996-08-31 |
| 7 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab_2001_NFI   | 05 34 31.9               | +22 00 51.01              | 2079501400 | 2001-09-28 |
| 8 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 2027500100 | 1996-09-06 |
| 9 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3102300200 | 1999-09-25 |
| 10 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3050100100 | 1998-04-06 |
| 11 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab            | 05 34 31.9               | +22 00 51.01              | 3028100100 | 1996-08-31 |
| 12 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB_CAL_NFI    | 05 34 31.9               | +22 00 51.01              | 3102300400 | 2000-04-10 |
| 13 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | CRAB_cal_NFI    | 05 34 31.9               | +22 00 51.01              | 3105100200 | 2000-10-01 |
| 14 <input checked="" type="checkbox"/> Select                         | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab_2001_NFI   | 05 34 31.9               | +22 00 51.01              | 3139100100 | 2001-09-28 |

# BEPPOSAX SCIENCE ARCHIVE

| Entry number | Archive            | Interactive Analysis | Target Name      | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | obs_code   | start_date |
|--------------|--------------------|----------------------|------------------|--------------------------|---------------------------|------------|------------|
| 1            | SSDC Data Explorer | Data Access          | Crab (calibrati) | 05 34 31.79              | +22 00 51.01              | 3028100110 | 1997-04-11 |
| 2            |                    |                      |                  |                          |                           |            | 8-10-13    |
| 3            |                    |                      |                  |                          |                           |            | 9-09-25    |
| 4            |                    |                      |                  |                          |                           |            | 7-10-08    |
| 5            |                    |                      |                  |                          |                           |            | 9-03-09    |
| 6            |                    |                      |                  |                          |                           |            | 6-08-31    |
| 7            |                    |                      |                  |                          |                           |            | 1-09-28    |
| 8            |                    |                      |                  |                          |                           |            | 6-09-06    |
| 9            |                    |                      |                  |                          |                           |            | 9-09-25    |
| 10           |                    |                      |                  |                          |                           |            | 8-04-06    |
| 11           |                    |                      |                  |                          |                           |            | 6-08-31    |
| 12           |                    |                      |                  |                          |                           |            | 0-04-10    |
| 13           |                    |                      |                  |                          |                           |            | 0-10-01    |
| 14           |                    |                      |                  |                          |                           |            | 1-09-28    |

**Image Centered On:**

RA (deg) 83.63 Dec (deg) 22.00

LII (deg) 184.56 BII (deg) -5.79

Source name: Search

Image half size (pixel) 250

Emin (PHA) 44

Emax (PHA) 200

Catalog Overlay

Radio IR X-Ray Gamma Sources cats

AT20G  
ATCAPMN  
B3  
CRATES

JS9 display: Run (JS9) Reset to default

Ximage display parameters:

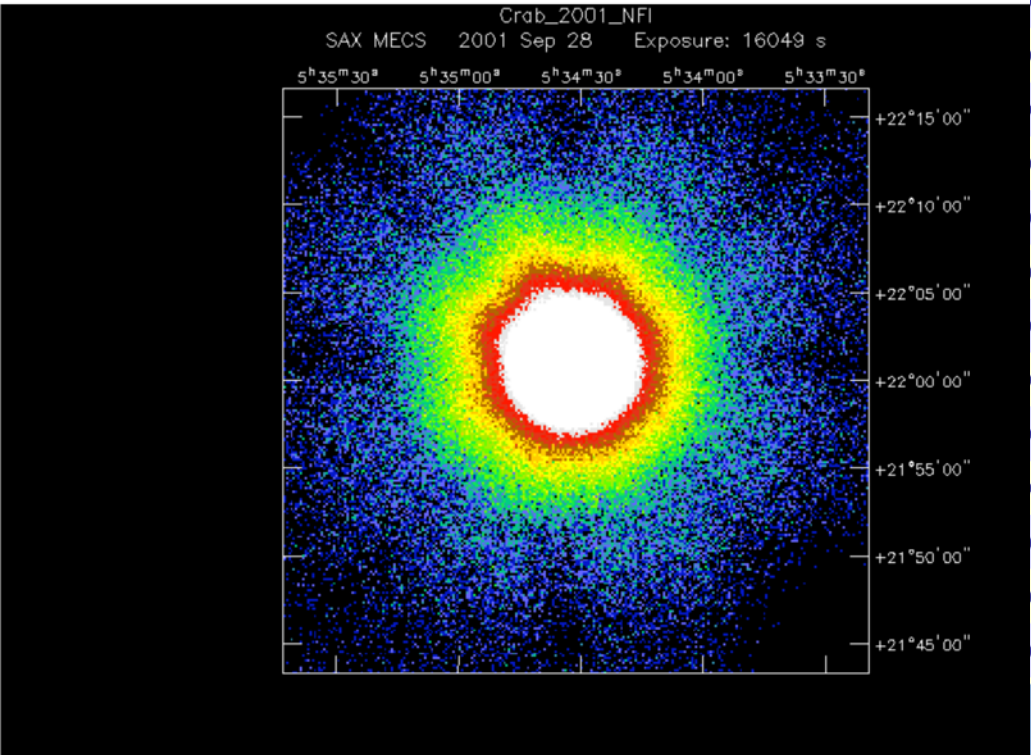
Color blubase

Color scaling log

Minimum level displayed 1

Maximum level displayed 100

Skygrid Off



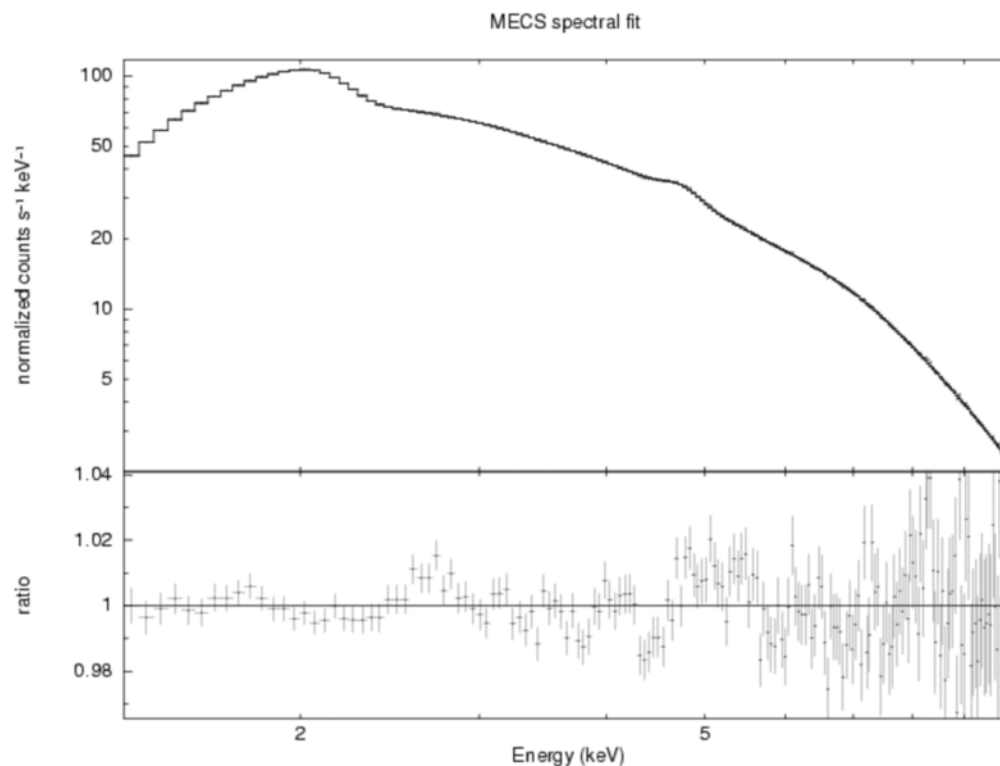
# BEPPOSAX SCIENCE ARCHIVE

| Entry number               |                    | Archive     | Interactive Analysis |                       | Target Name     | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | obs_code   | start_date |
|----------------------------|--------------------|-------------|----------------------|-----------------------|-----------------|--------------------------|---------------------------|------------|------------|
| Selection mode:<br>Include |                    |             |                      |                       | ↑ ↓             | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats  | ↑ ↓ Stats  |
| ✓ All                      |                    |             |                      |                       |                 |                          |                           |            |            |
| 1 ✓<br>Select              | SSDC Data Explorer | Data Access | Interactive Analysis | SSDC Products Preview | Crab (calibrati | 05 34 31.79              | +22 00 51.01              | 3028100110 | 1997-04-11 |
| 2 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 0-13       |
| 3 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 19-25      |
| 4 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 0-08       |
| 5 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 13-09      |
| 6 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 18-31      |
| 7 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 19-28      |
| 8 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 19-06      |
| 9 ✓<br>Select              | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 19-25      |
| 10 ✓<br>Select             | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 14-06      |
| 11 ✓<br>Select             | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 18-31      |
| 12 ✓<br>Select             | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 14-10      |
| 13 ✓<br>Select             | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 0-01       |
| 14 ✓<br>Select             | SSDC Data Explorer | Data Access | Interact             |                       |                 |                          |                           |            | 19-28      |

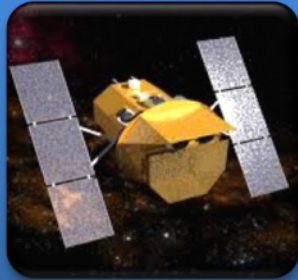
MECS spectral fit

normalized counts s<sup>-1</sup> keV<sup>-1</sup>

ratio



# SWIFT SCIENCE ARCHIVE



## Swift

- 2004-present
- X-Ray and Gamma-Ray Astrophysics

Official Mirror Archive available at the SSDC since beginning of the mission

- About **200,000** pointed observations
- Scientific data for 3 scientific instruments: Burst Alert Telescope (**BAT**), X-Ray Telescope (**XRT**), Ultra Violet-Optical Telescope (**UVOT**)
- **Interactive Analysis Tools** for XRT and UVOT telescopes
- Almost real-time **Quick Look** archive (~30 minutes time scale)
- SSDC responsible of the ground scientific **data processing software** for XRT (**XRTDAS** package)



# SWIFT SCIENCE ARCHIVE

| Entry<br>number   |                                    | Interactive Analysis                     |   | Archive                     | Target<br>Name                      | obsid                                     | RA (J2000)                          | Dec (J2000)                         | start_time                          |
|---|------------------------------------|--|---|-----------------------------|-------------------------------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
|   |                                    | XRT                                      | UVOT                                      |                             |                                     |   | hh mm ss.d                          | dd mm ss.d                          |                                     |
| Selection<br>mode:<br><div><div>Include</div><div><input checked="" type="checkbox"/> All</div></div> |                                    |  |   |                             | <div><div>↑</div><div>↓</div></div> | <div><div>↑</div><div>↓</div></div> Stats | <div><div>↑</div><div>↓</div></div> | <div><div>↑</div><div>↓</div></div> | <div><div>↑</div><div>↓</div></div> |
| <div>1<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050300001                               | 16 13 56.58                         | +65 41 48.83                        | Dec 23,<br>2004<br>00:12:00         |
| <div>2<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050301001                               | 16 15 34.71                         | +65 41 49.3                         | Dec 25,<br>2004<br>00:23:00         |
| <div>3<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050300005                               | 16 13 39.51                         | +65 43 09.04                        | Jan 26,<br>2005<br>00:34:00         |
| <div>4<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050301002                               | 16 15 32.87                         | +65 42 05.14                        | Jan 27,<br>2005<br>21:54:00         |
| <div>5<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050300004                               | 16 13 37.62                         | +65 42 49.64                        | Mar 1,<br>2005<br>23:59:00          |
| <div>6<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050302001                               | 16 14 27.77                         | +65 42 32.86                        | Mar 8,<br>2005<br>02:05:00          |
| <div>7<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050302002                               | 16 14 46.05                         | +65 42 50.0                         | Mar 9,<br>2005<br>00:31:00          |
| <div>8<div><input checked="" type="checkbox"/></div><div>Select</div></div>                           | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876                              | 00050303001                               | 16 14 53.1                          | +65 43 03.71                        | Mar 9,<br>2005<br>08:53:00          |
|   |                                    |  |   |                             |                                     |   |                                     |                                     | Mar 12,<br>2005<br>00:00:00         |

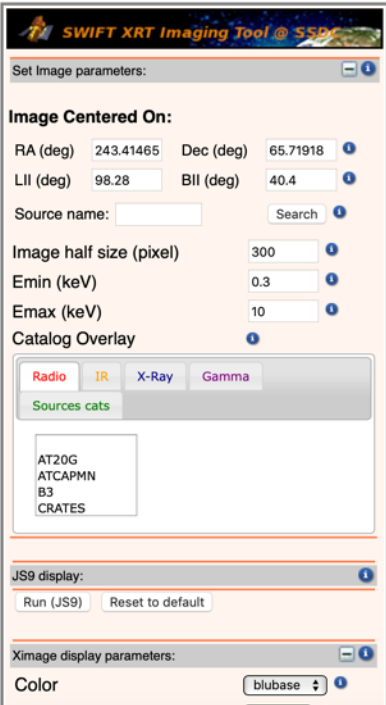
# SWIFT SCIENCE ARCHIVE

| Entry<br>number  | Interactive Analysis               |  |   | Archive                     | Target<br>Name  | obsid   | RA (J2000)<br>hh mm ss.d  | Dec (J2000)<br>dd mm ss.d   | start_time  |
|--|------------------------------------|--|---|-----------------------------|---|---|---|---|---|
|  | XRT                                | UVOT                                     |   |                             |   |   |   |   |   |
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All              |                                    |  |   |                             | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> Stats | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> |
| <b>1</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050300001   | 16 13 56.58   | +65 41 48.83  | Dec 23,<br>2004<br>00:12:00                                       |
| <b>2</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050301001   | 16 15 34.71   | +65 41 49.3   | Dec 25,<br>2004<br>00:23:00                                       |
| <b>3</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050300005   | 16 13 39.51   | +65 43 09.04  | Jan 26,<br>2005<br>00:34:00                                       |
| <b>4</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050301002   | 16 15 32.87   | +65 42 05.14  | Jan 27,<br>2005<br>21:54:00                                       |
| <b>5</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050300004   | 16 13 37.62   | +65 42 49.64  | Mar 1,<br>2005<br>23:59:00  |
| <b>6</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050302001   | 16 14 27.77   | +65 42 32.86  | Mar 8,<br>2005<br>02:05:00  |
| <b>7</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050302002   | 16 14 46.05   | +65 42 50.0   | Mar 9,<br>2005<br>00:31:00  |
| <b>8</b> <input checked="" type="checkbox"/> <input type="button" value="Select"/> | <a href="#">SSDC Data Explorer</a> | <a href="#">XRT Interactive Analysis</a> | <a href="#">UVOT Interactive Analysis</a> | <a href="#">Data Access</a> | MRK876  | 00050303001   | 16 14 53.1  | +65 43 03.71  | Mar 9,<br>2005<br>08:53:00  |

# SWIFT SCIENCE ARCHIVE

| Entry number  | Interactive Analysis |                                 | Archive     | Target Name | obsid       | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | start_time            |
|---|----------------------|---------------------------------|-------------|-------------|-------------|--------------------------|---------------------------|-----------------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All | XRT                  | UVOT                            |             | ↑ ↓         | ↑ ↓ Stats   | ↑ ↓                      | ↑ ↓                       | ↑ ↓                   |
| 1 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   | <b>XRT Interactive Analysis</b> | Data Access | MRK876      | 00050300001 | 16 13 56.58              | +65 41 48.83              | Dec 23, 2004 00:12:00 |
| 2 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Dec 25, 2004 00:23:00 |
| 3 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Jan 26, 2005 00:34:00 |
| 4 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Jan 27, 2005 21:54:00 |
| 5 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 1, 2005 23:59:00  |
| 6 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 8, 2005 02:05:00  |
| 7 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 9, 2005 00:31:00  |
| 8 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 9, 2005 08:53:00  |



**SWIFT XRT Imaging Tool @ SSDC**

Set Image parameters:

Image Centered On:

RA (deg) 243.41465 Dec (deg) 65.71918

LII (deg) 98.28 BII (deg) 40.4

Source name: Search

Image half size (pixel) 300

Emin (keV) 0.3

Emax (keV) 10

Catalog Overlay

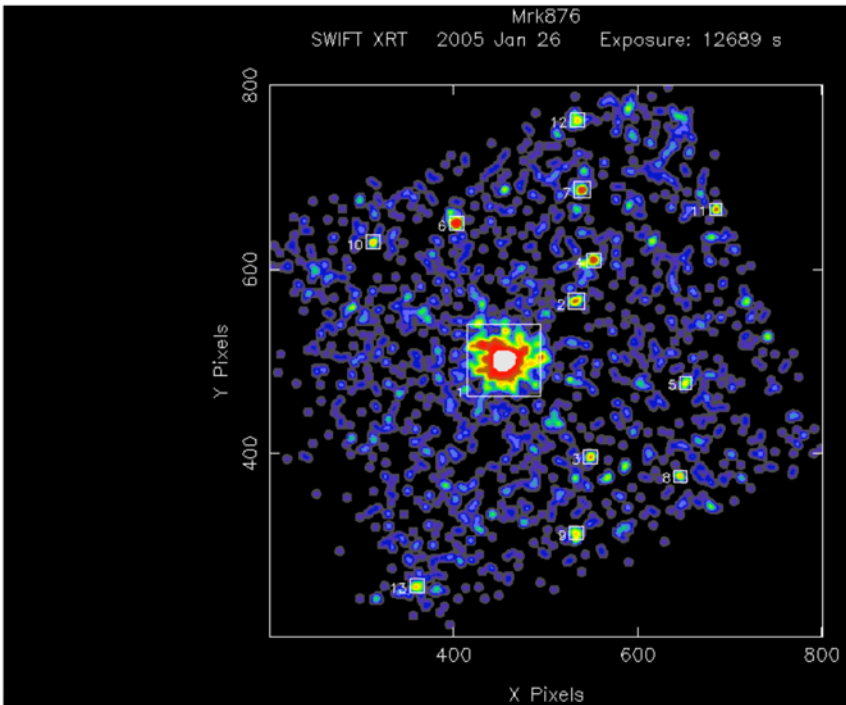
Radio IR X-Ray Gamma

Sources cats

AT20G  
ATCAPMN  
B3  
CRATES

JS9 display:  
Run (JS9) Reset to default

Ximage display parameters:  
Color blubase



Mrk876

SWIFT XRT 2005 Jan 26 Exposure: 12689 s

Y Pixels

X Pixels



# SWIFT SCIENCE ARCHIVE

| Entry number  | Interactive Analysis |                                 | Archive     | Target Name | obsid       | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | start_time            |
|---|----------------------|---------------------------------|-------------|-------------|-------------|--------------------------|---------------------------|-----------------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All | XRT                  | UVOT                            |             | ↑ ↓         | ↑ ↓ Stats   | ↑ ↓                      | ↑ ↓                       | ↑ ↓                   |
| 1 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   | <b>XRT Interactive Analysis</b> | Data Access | MRK876      | 00050300001 | 16 13 56.58              | +65 41 48.83              | Dec 23, 2004 00:12:00 |
| 2 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Dec 25, 2004 00:23:00 |
| 3 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Jan 26, 2005 00:34:00 |
| 4 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Jan 27, 2005 21:54:00 |
| 5 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 1, 2005 23:59:00  |
| 6 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 8, 2005 02:05:00  |
| 7 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 9, 2005 00:31:00  |
| 8 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer   |                                 |             |             |             |                          |                           | Mar 9, 2005 08:53:00  |



**SWIFT XRT Imaging Tool @ SSDC**

Set Image parameters:

Image Centered On:

RA (deg) 243.41465 Dec (deg) 65.71918

LII (deg) 98.28 BII (deg) 40.4

Source name: Search

Image half size (pixel) 300

Emin (keV) 0.3

Emax (keV) 10

Catalog Overlay

Radio IR X-Ray Gamma

Sources cats

AT20G ATCAPMN B3 CRATES

JS9 display: Run (JS9) Reset to default

Ximage display parameters:

Color blubase



Mrk876

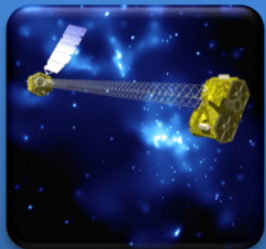
SWIFT XRT 2005 Jan 26 Exposure: 12689 s

Y Pixels

X Pixels

See talk by Fabrizio Lucarelli

# NuSTAR SCIENCE ARCHIVE



## NuSTAR

- 2012-present
- Hard X-Ray Astrophysics

Official Mirror Archive available at the SSDC since beginning of the mission

- Over **2,700** pointed observations
- Scientific data for the 2 hard X-rays telescope (Focal Plane Module A and Focal Plane Module B) (**FPMA** and **FPMB**)
- **Interactive Analysis Tools** for both telescopes
- SSDC responsible of the ground scientific **data processing software** for FPMA and FPMB (**NuSTARDAS** package), used by NASA to generate the archive

# NUSTAR SCIENCE ARCHIVE

| Entry number                                 |                    | Archive     | Interactive Analysis | Target Name | obsid       | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | time                  | public_date           | exposure_a  |
|--|--------------------|-------------|----------------------|-------------|-------------|--------------------------|---------------------------|-----------------------|-----------------------|-------------|
| Selection mode:                              |                    |             |                      | ↑ ↓         | ↑ ↓ Stats   | ↑ ↓                      | ↑ ↓                       | ↑ ↓                   | ↑ ↓                   | ↑ ↓ Stats   |
| <input type="checkbox"/> Include             |                    |             |                      |             |             |                          |                           |                       |                       |             |
| <input checked="" type="checkbox"/> All      |                    |             |                      |             |             |                          |                           |                       |                       |             |
| 1 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A       | 40001019002 | 23 23 21.04              | +58 49 19.2               | Aug 18, 2012 19:46:00 | Sep 23, 2014 00:00:00 | 293673.6108 |
| 2 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS2  | 40021002002 | 23 23 14.83              | +58 48 41.03              | Nov 23, 2012 17:36:00 | Sep 23, 2014 00:00:00 | 288404.9947 |
| 3 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_TI1   | 40021011002 | 23 23 27.64              | +58 49 28.55              | Oct 30, 2013 08:01:00 | Sep 23, 2014 00:00:00 | 245844.6137 |
| 4 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_TI2   | 40021012002 | 23 23 12.19              | +58 47 54.24              | Nov 27, 2013 16:36:00 | Sep 23, 2014 00:00:00 | 238849.5534 |
| 5 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS3  | 40021003003 | 23 23 40.82              | +58 49 53.76              | May 28, 2013 23:58:00 | Sep 23, 2014 00:00:00 | 233253.7978 |
| 6 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS1  | 40021001005 | 23 23 03.21              | +58 48 33.83              | Oct 7, 2012 18:21:00  | Sep 23, 2014 00:00:00 | 227773.6114 |
| 7 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS2  | 40021002008 | 23 23 40.94              | +58 46 50.87              | Mar 5, 2013 09:26:00  | Sep 23, 2014 00:00:00 | 225932.51   |
| 8 <input checked="" type="checkbox"/> Select | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS1  | 40021001002 | 23 23 08.16              | +58 50 50.64              | Aug 27, 2012 01:16:00 | Sep 23, 2014 00:00:00 | 189677.6606 |

# NUSTAR SCIENCE ARCHIVE

| Entry number   |                    | Archive     | Interactive Analysis | Target Name   | obsid   | RA (J2000)<br>hh mm ss.d  | Dec (J2000)<br>dd mm ss.d   | time  | public_date   | exposure_a  |
|--|--------------------|-------------|----------------------|---|---|---|---|---|---|---|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All          |                    |             |                      | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> Stats | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> Stats |
| 1 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A   | 40001019002   | 23 23 21.04   | +58 49 19.2   | Aug 18, 2012<br>19:46:00  | Sep 23, 2014<br>00:00:00  | 293673.6108   |
| 2 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS2  | 40021002002   | 23 23 14.83   | +58 48 41.03  | Nov 23, 2012<br>17:36:00  | Sep 23, 2014<br>00:00:00  | 288404.9947   |
| 3 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_TI1   | 40021011002   | 23 23 27.64   | +58 49 28.55  | Oct 30, 2013<br>08:01:00  | Sep 23, 2014<br>00:00:00  | 245844.6137   |
| 4 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_TI2   | 40021012002   | 23 23 12.19   | +58 47 54.24  | Nov 27, 2013<br>16:36:00  | Sep 23, 2014<br>00:00:00  | 238849.5534   |
| 5 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS3  | 40021003003   | 23 23 40.82   | +58 49 53.76  | May 28, 2013<br>23:58:00  | Sep 23, 2014<br>00:00:00  | 233253.7978   |
| 6 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS1  | 40021001005   | 23 23 03.21   | +58 48 33.83  | Oct 7, 2012<br>18:21:00   | Sep 23, 2014<br>00:00:00  | 227773.6114   |
| 7 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS2  | 40021002008   | 23 23 40.94   | +58 46 50.87  | Mar 5, 2013<br>09:26:00   | Sep 23, 2014<br>00:00:00  | 225932.51   |
| 8 <input checked="" type="checkbox"/><br><input type="button" value="Select"/> | SSDC Data Explorer | Data Access | Interactive Analysis | CAS_A_MOS1  | 40021001002   | 23 23 08.16   | +58 50 50.64  | Aug 27, 2012<br>01:16:00  | Sep 23, 2014<br>00:00:00  | 189677.6606   |



# NUSTAR SCIENCE ARCHIVE

| Entry number  |                    | Archive     | Interactive Analysis        | Target Name | obsid       | RA (J2000)<br>hh mm ss.d | Dec (J2000)<br>dd mm ss.d | time                     | public_date              | exposure_a  |
|---|--------------------|-------------|-----------------------------|-------------|-------------|--------------------------|---------------------------|--------------------------|--------------------------|-------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                    |             |                             |             |             |                          |                           |                          |                          |             |
|   |                    |             | ↑ ↓                         | ↑ ↓ Stats   |             | ↑ ↓                      | ↑ ↓                       | ↑ ↓                      | ↑ ↓                      | ↑ ↓ Stats   |
| 1 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access | <b>Interactive Analysis</b> | CAS_A       | 40001019002 | 23 23 21.04              | +58 49 19.2               | Aug 18, 2012<br>19:46:00 | Sep 23, 2014<br>00:00:00 | 293673.6108 |
| 2 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 404.9947    |
| 3 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 444.6137    |
| 4 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 49.5534     |
| 5 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 253.7978    |
| 6 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 73.6114     |
| 7 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 932.51      |
| 8 <input checked="" type="checkbox"/><br>Select                       | SSDC Data Explorer | Data Access |                             |             |             |                          |                           |                          |                          | 77.6606     |

**NuSTAR Imaging Tool @ SSDC**

Set Image parameters:

**Image Centered On:**

RA (deg) 350.86 Dec (deg) 58.81

LII (deg) 111.73 BII (deg) -2.14

Source name: Search

Image half size (pixel) 300

Emin (keV) 3

Emax (keV) 79

Catalog Overlay

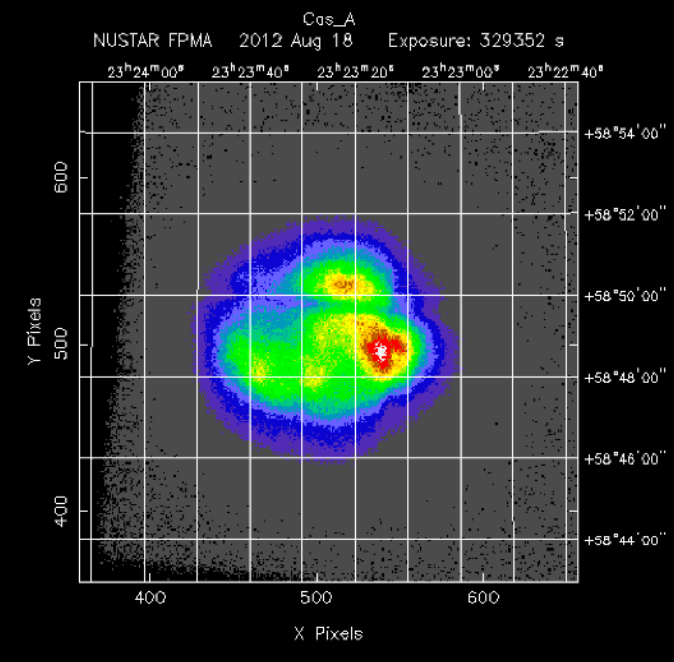
Radio IR X-Ray Gamma

Sources cats

AT20G  
ATCAPMN  
B3  
CRATES

NuSTAR FPMA 2012 Aug 18 Exposure: 329352 s

Cas\_A

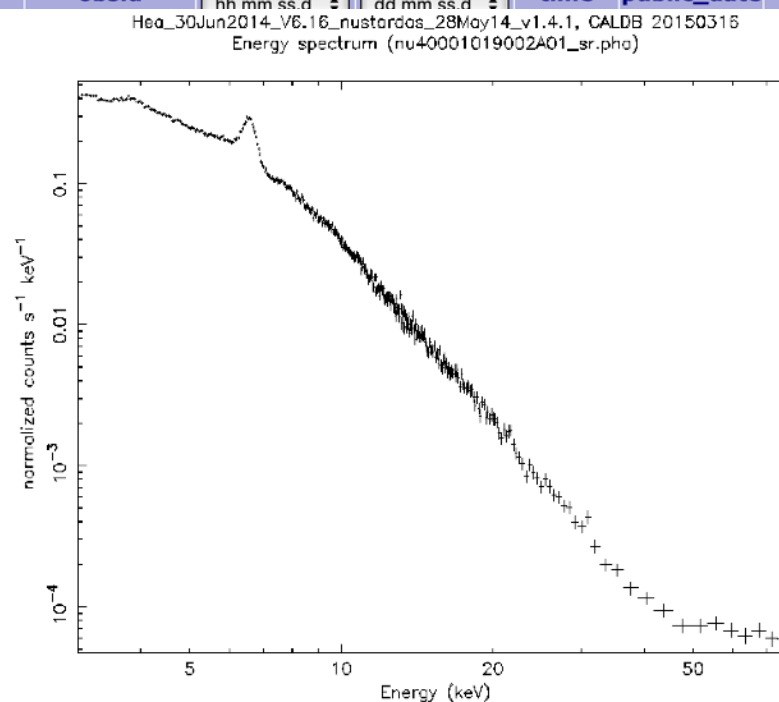


Y Pixels

X Pixels

# NUSTAR SCIENCE ARCHIVE

| Entry number    |   | Archive   | Interactive Analysis | Target Name               | obsid      | RA (J2000)  | Dec (J2000) | time         | public_date           | exposure_a            |             |
|-----------------|---|---|----------------------|---------------------------|------------|-------------|-------------|--------------|-----------------------|-----------------------|-------------|
| Selection mode: | <div>Include</div> <div><input checked="" type="checkbox"/> All</div> |   |                      | <div>↑</div> <div>↓</div> |            | hh mm ss.d  | dd mm ss.d  |              |                       |                       |             |
|                 |   | Hea_30Jun2014_V6.16_nustardos_28May14_v1.4.1, CALDB 20150316<br>Energy spectrum (nu40001019002A01_sr.pho) |                      |                           |            |             |             |              |                       |                       |             |
| 1               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A      |             |             |              |                       | 108                   |             |
| 2               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_MC   |             |             |              |                       | 947                   |             |
| 3               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_T    |             |             |              |                       | 137                   |             |
| 4               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_T    |             |             |              |                       | 534                   |             |
| 5               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_MC   |             |             |              |                       | 978                   |             |
| 6               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_MC   |             |             |              |                       | 114                   |             |
| 7               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_MC   |             |             |              |                       | 51                    |             |
| 8               | <div>Select</div>   | SSDC Data Explorer  | Data Access          | Interactive Analysis      | CAS_A_MOS1 | 40021001002 | 23 23 08.16 | +58 50 50.64 | Aug 27, 2012 01:16:00 | Sep 23, 2014 00:00:00 | 189677.6606 |



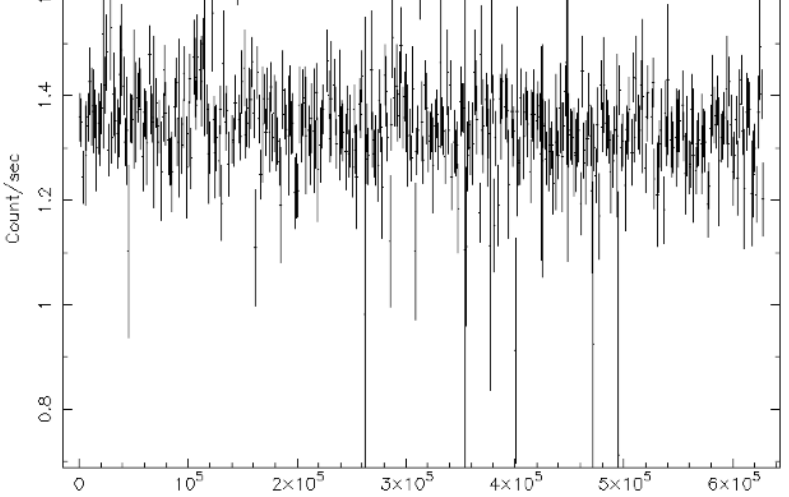


# NUSTAR SCIENCE ARCHIVE

| Entry number  | Archive            | Interactive Analysis | Target Name          |                        |
|---|--------------------|----------------------|----------------------|------------------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                    |                      |                      |                        |
| 1 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A 4000             |
| 2 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_MOS2 4002        |
| 3 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_TI1 4002         |
| 4 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_TI2 4002         |
| 5 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_MOS3 40021003003 |
| 6 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_MOS1 40021001005 |
| 7 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_MOS2 40021002008 |
| 8 <input checked="" type="checkbox"/> Select                          | SSDC Data Explorer | Data Access          | Interactive Analysis | CAS_A_MOS1 40021001002 |

Light curve (nu40001019002A01\_sr.lc), 85–1959 PI channels  
Bin time: 1225. s

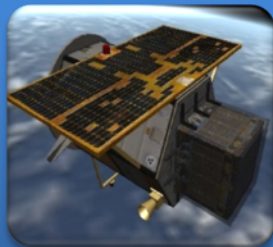


Count/sec

Time (s)

Hea\_30Jun2014\_V6.16\_nustardas\_28May14\_v1.4.1, CALDB 20150316  
Start Time 16157 20:19:08:074 Stop Time 16165 2:14:25:737

|              |              |             |
|--------------|--------------|-------------|
| 2013         | 2014         |             |
| 23:58:00     | 00:00:00     | 233253.7978 |
| Oct 7, 2012  | Sep 23, 2014 | 227773.6114 |
| 18:21:00     | 00:00:00     |             |
| Mar 5, 2013  | Sep 23, 2014 | 225932.51   |
| 09:26:00     | 00:00:00     |             |
| Aug 27, 2012 | Sep 23, 2014 | 189677.6606 |
| 01:16:00     | 00:00:00     |             |



## AGILE

- 2007-present
- X-Ray and Gamma-Ray Astrophysics

Archive available at the SSDC since beginning of the mission

- **AGILE Data Center** located at the SSDC
- Scientific data for the Gamma-ray (30 MeV-50 GeV, **GRID**) and hard X-ray (18-60 keV, **SuperAGILE**) instruments
- **Quick Look** archive
- **Level 3 archive** (pre-compiled exposure, count and diffuse background maps)
- **Interactive Analysis Applications**

# AGILE SCIENCE ARCHIVE

| Entry<br>number |                     | GRID LV3 data<br>retrieval    | GRID Interactive<br>Analysis | START DATE                      | STOP DATE              | RA (J2000)                                     | DEC (J2000)          | MEAN EXP<br>(cm <sup>2</sup> s sr) |         |
|-----------------|---------------------|-------------------------------|------------------------------|---------------------------------|------------------------|--|----------------------|------------------------------------|---------|
|                 |                     |                               |                              |                                 |                        | hh mm ss.d                                     | dd mm ss.d           |                                    |         |
|                 |                     |                               |                              |                                 |                        | <div>Selection mode:<br/>Include<br/>All</div> |                      |                                    |         |
|                 |                     |                               | <div>↑ ↓</div>               | <div>↑ ↓</div>                  | <div>↑ ↓</div>         | <div>↑ ↓</div>                                 | <div>↑ ↓ Stats</div> |                                    |         |
| 1               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-01-21<br>12:00:00 | 2008-02-18<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 863.166 |
| 2               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-03-17<br>12:00:00 | 2008-04-14<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 1773.82 |
| 3               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-06-09<br>12:00:00 | 2008-07-07<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 163.635 |
| 4               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-07-07<br>12:00:00 | 2008-08-04<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 1343.54 |
| 5               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-08-04<br>12:00:00 | 2008-09-01<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 2135.34 |
| 6               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-09-01<br>12:00:00 | 2008-09-29<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 1761.88 |
| 7               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-09-29<br>12:00:00 | 2008-10-27<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 235.119 |
| 8               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-11-24<br>12:00:00 | 2008-12-22<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 129.364 |
| 9               | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2008-12-22<br>12:00:00 | 2009-01-19<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 742.372 |
| 10              | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2009-01-19<br>12:00:00 | 2009-02-16<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 860.439 |
| 11              | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2009-02-16<br>12:00:00 | 2009-03-16<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 645.714 |
| 12              | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2009-03-16<br>12:00:00 | 2009-04-13<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 1138    |
| 13              | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2009-05-11<br>12:00:00 | 2009-06-08<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 128.689 |
| 14              | <div>✔ Select</div> | <div>SSDC Data Explorer</div> | <div>Data Access</div>       | <div>Interactive Analysis</div> | 2009-06-08<br>12:00:00 | 2009-07-06<br>12:00:00                         | 04 36 06.62          | +17 42 29.52                       | 509.995 |

# AGILE SCIENCE ARCHIVE

| Entry<br>number  |                    | GRID LV3 data<br>retrieval | GRID Interactive<br>Analysis    | START DATE             | STOP DATE              | RA (J2000)      | DEC (J2000)     | MEAN EXP<br>(cm <sup>2</sup> s sr) |
|--|--------------------|----------------------------|---------------------------------|------------------------|------------------------|-----------------|-----------------|------------------------------------|
|  |                    |                            |                                 |                        |                        | hh mm ss.d ⌵    | dd mm ss.d ⌵    |                                    |
| Selection mode:<br><div>Include</div> <div><input checked="" type="checkbox"/> All</div> |                    |                            |                                 |                        |                        |                 |                 |                                    |
|  |                    |                            | <div>⬆️⬆️</div>                 | <div>⬆️⬆️</div>        | <div>⬆️⬆️</div>        | <div>⬆️⬆️</div> | <div>⬆️⬆️</div> | <div>⬆️⬆️</div> Stats              |
| 1 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-01-21<br>12:00:00 | 2008-02-18<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 863.166                            |
| 2 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-03-17<br>12:00:00 | 2008-04-14<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 1773.82                            |
| 3 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-06-09<br>12:00:00 | 2008-07-07<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 163.635                            |
| 4 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-07-07<br>12:00:00 | 2008-08-04<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 1343.54                            |
| 5 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-08-04<br>12:00:00 | 2008-09-01<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 2135.34                            |
| 6 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-09-01<br>12:00:00 | 2008-09-29<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 1761.88                            |
| 7 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-09-29<br>12:00:00 | 2008-10-27<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 235.119                            |
| 8 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-11-24<br>12:00:00 | 2008-12-22<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 129.364                            |
| 9 <input checked="" type="checkbox"/> <div>Select</div>                                  | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2008-12-22<br>12:00:00 | 2009-01-19<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 742.372                            |
| 10 <input checked="" type="checkbox"/> <div>Select</div>                                 | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2009-01-19<br>12:00:00 | 2009-02-16<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 860.439                            |
| 11 <input checked="" type="checkbox"/> <div>Select</div>                                 | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2009-02-16<br>12:00:00 | 2009-03-16<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 645.714                            |
| 12 <input checked="" type="checkbox"/> <div>Select</div>                                 | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2009-03-16<br>12:00:00 | 2009-04-13<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 1138                               |
| 13 <input checked="" type="checkbox"/> <div>Select</div>                                 | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2009-05-11<br>12:00:00 | 2009-06-08<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 128.689                            |
| 14 <input checked="" type="checkbox"/> <div>Select</div>                                 | SSDC Data Explorer | <div>Data Access</div>     | <div>Interactive Analysis</div> | 2009-06-08<br>12:00:00 | 2009-07-06<br>12:00:00 | 04 36 06.62     | +17 42 29.52    | 509.995                            |



# AGILE SCIENCE ARCHIVE

| Entry number  |                                    | GRID LV3 data retrieval     | GRID Interactive Analysis            | START DATE             | STOP DATE              | RA (J2000)<br>hh mm ss.d ↕ | DEC (J2000)<br>dd mm ss.d ↕ | MEAN EXP<br>(cm <sup>2</sup> s sr) |  |
|---|------------------------------------|-----------------------------|--------------------------------------|------------------------|------------------------|----------------------------|-----------------------------|------------------------------------|--|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                                    |                             | ↑ ↓                                  | ↑ ↓                    | ↑ ↓                    | ↑ ↓                        | ↑ ↓                         | ↑ ↓ Stats                          |  |
| 1 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-01-21<br>12:00:00 | 2008-02-18<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 863.166                            |  |
| 2 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-03-17<br>12:00:00 | 2008-04-14<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 1773.82                            |  |
| 3 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-06-09<br>12:00:00 | 2008-07-07<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 163.635                            |  |
| 4 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-07-07<br>12:00:00 | 2008-08-04<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 1343.54                            |  |
| 5 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-08-04<br>12:00:00 | 2008-09-01<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 2135.34                            |  |
| 6 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-09-01<br>12:00:00 | 2008-09-29<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 1761.88                            |  |
| 7 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-09-29<br>12:00:00 | 2008-10-27<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 235.119                            |  |
| 8 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-11-24<br>12:00:00 | 2008-12-22<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 129.364                            |  |
| 9 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-12-22<br>12:00:00 | 2009-01-19<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 742.372                            |  |
| 10 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2009-01-19<br>12:00:00 | 2009-02-16<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 860.439                            |  |
| 11 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2009-02-16<br>12:00:00 | 2009-03-16<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 645.714                            |  |
| 12 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2009-03-16<br>12:00:00 | 2009-04-13<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 1138                               |  |
| 13 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2009-05-11<br>12:00:00 | 2009-06-08<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 128.689                            |  |
| 14 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2009-06-08<br>12:00:00 | 2009-07-06<br>12:00:00 | 04 36 06.62                | +17 42 29.52                | 509.995                            |  |



# AGILE SCIENCE ARCHIVE

| Entry number  |                                    | GRID LV3 data retrieval   | GRID Interactive Analysis            | START DATE             | STOP DATE              | RA (J2000)<br>hh mm ss.d | DEC (J2000)<br>dd mm ss.d | MEAN EXP<br>(cm <sup>2</sup> s sr) |
|---|------------------------------------|---|--------------------------------------|------------------------|------------------------|--------------------------|---------------------------|------------------------------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                                    |   | ↑ ↓                                  | ↑ ↓                    | ↑ ↓                    | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats                          |
| 1 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a>   | <a href="#">Interactive Analysis</a> | 2008-01-21<br>12:00:00 | 2008-02-18<br>12:00:00 | 04 36 06.62              | +17 42 29.52              | 863.166                            |
| 2 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a>   | <a href="#">Interactive Analysis</a> | 2008-03-17<br>12:00:00 | 2008-04-14<br>12:00:00 | 04 36 06.62              | +17 42 29.52              | 1773.82                            |
| 3 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      | <div> <p><b>AGILE Imaging Tool @ SSCD</b></p> <p>Set Image parameters:</p> <p>Image Centered On:</p> <p>RA (deg) 83.63 Dec (deg) 22.01</p> <p>LII (deg) 184.56 BII (deg) -5.78</p> <p>Source name: Search</p> <p>Image half size (deg) 10.00</p> <p>Emin (MeV) 100</p> <p>Emax (MeV) 50000</p> <p>Catalog Overlay</p> <p>Radio IR X-Ray Gamma Sources cats</p> <p>AT20G<br/>ATCAPMN<br/>B3<br/>CRATES</p> <p>JS9 display:<br/>Run (JS9) Reset to default</p> <p>Ximage display parameters:<br/>Run (Ximage) Reset to default</p> <p>GRID ML Interactive Analysis</p> </div> |                                      |                        |                        |                          |                           |                                    |
| 4 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 5 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 6 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 7 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 8 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 9 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 10 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 11 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 12 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 13 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |
| 14 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |   |                                      |                        |                        |                          |                           |                                    |

AGILE GRID 2008 Mar 17

Start Time: 2008-03-17 End Time: 2008-04-14

# AGILE SCIENCE ARCHIVE

| Entry number  |                                    | GRID LV3 data retrieval     | GRID Interactive Analysis            | START DATE             | STOP DATE              | RA (J2000)<br>hh mm ss.d | DEC (J2000)<br>dd mm ss.d | MEAN EXP<br>(cm <sup>2</sup> s sr) |
|---|------------------------------------|-----------------------------|--------------------------------------|------------------------|------------------------|--------------------------|---------------------------|------------------------------------|
| Selection mode:<br>Include<br><input checked="" type="checkbox"/> All |                                    |                             | ↑ ↓                                  | ↑ ↓                    | ↑ ↓                    | ↑ ↓                      | ↑ ↓                       | ↑ ↓ Stats                          |
| 1 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-01-21<br>12:00:00 | 2008-02-18<br>12:00:00 | 04 36 06.62              | +17 42 29.52              | 863.166                            |
| 2 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Explorer</a> | <a href="#">Data Access</a> | <a href="#">Interactive Analysis</a> | 2008-03-17<br>12:00:00 | 2008-04-14<br>12:00:00 | 04 36 06.62              | +17 42 29.52              | 1773.82                            |
| 3 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 4 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 5 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 6 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 7 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 8 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 9 <input checked="" type="checkbox"/> <a href="#">Select</a>          | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 10 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 11 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 12 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 13 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |
| 14 <input checked="" type="checkbox"/> <a href="#">Select</a>         | <a href="#">SSDC Data Exp</a>      |                             |                                      |                        |                        |                          |                           |                                    |



## Fermi

- 2008-present
- X-Ray and Gamma-Ray Astrophysics

Archive available at the SSDC since beginning of the mission

- LAT public data archive: photon database currently holds **1,218,564,703 photons**
- Quick Look archive (new data available in 2-3 hours)
- sky position **cone query** (region of interest), **data preview** (imaging count maps)
- **Online LAT data analysis** (unbinned likelihood on selected time intervals)
- Aperture **photometry light-curve** generation

# FERMI SCIENCE ARCHIVE

## Fermi SSDC Light Curve Explorer:

- 1) interactive display of catalogued Fermi LAT light curves
- 2) on-line basic temporal analysis on the displayed light curve

**Fermi-LAT light curves list of brightest sources**  
Fermi ASDC Light Curve Explorer (FALCE V0)

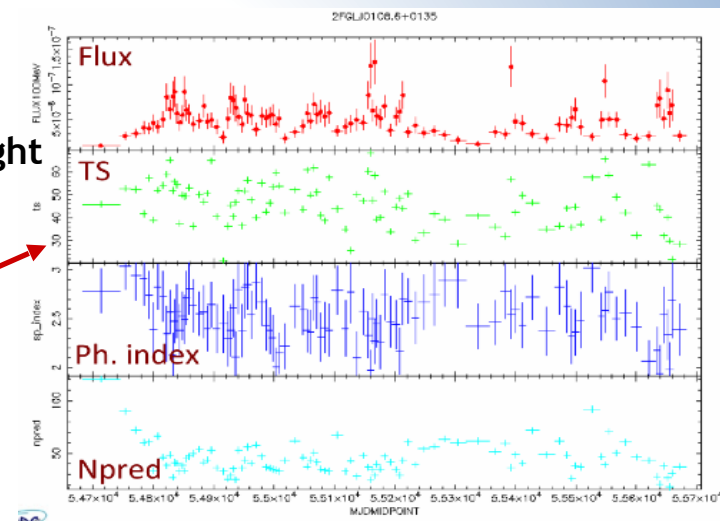
Help | Showhide columns | Advanced filtering | Print current view of table | Print complete table | Reset all filters

This is an interactive version of the Fermi-LAT light curves list of brightest sources  
Adaptive binning, internal use only  
(credits: Lott, B. and Escande, L.; University of Bordeaux)

Export Current view of Table as: [Latex format](#) | [HTML format](#) | [Raw text format](#) | [CSV text format](#)

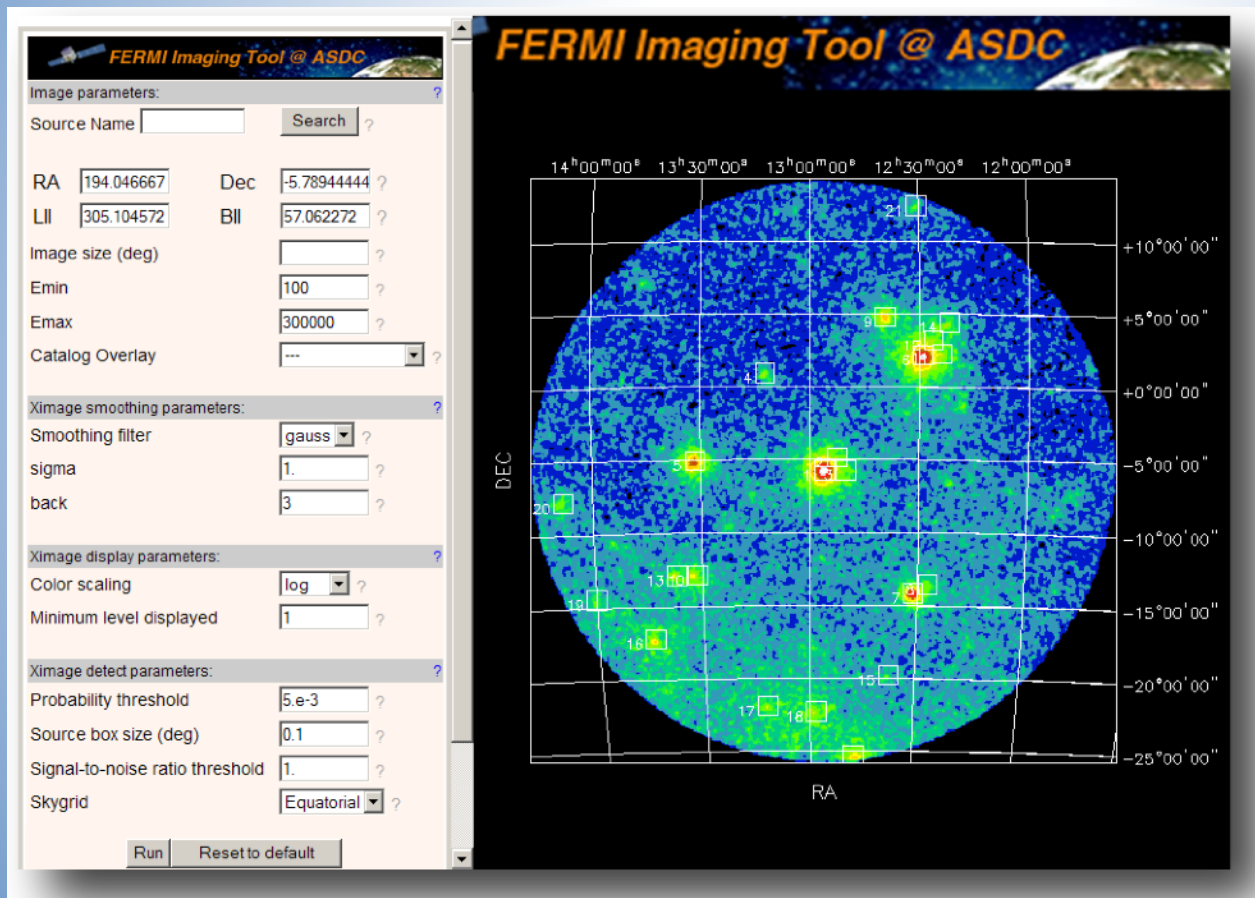
Previous Page | Next Page | Page Size (# of rows) 10 | Refresh page | Reset all filters | Show all entries

| Entry number | Source name                 | Counterpart name | RA (J2000.0) | Dec (J2000.0) | Gamma Assoc. | Flux 100-1000 GeV              | Spectral index | Spectral index Error | Optical classification |
|--------------|-----------------------------|------------------|--------------|---------------|--------------|--------------------------------|----------------|----------------------|------------------------|
|              | name                        | assoc.           | hh mm ss.s   | dd mm ss.s    | ACR          | flux <sub>100-1000</sub> ± err |                |                      | Optical class          |
| 1            | <a href="#">LC Explorer</a> | 2FGLJ0050.6-0929 | PKS 0048-09  | 00 50 40.3    | -09 29 45.0  | (38.5±/-2.5) e-10              | 2.34           | 0.041                | BL Lac                 |
| 2            | <a href="#">LC Explorer</a> | 2FGLJ0108.6+0135 | 4C +01.02    | 01 08 41.5    | +01 35 26.4  | (63.5±/-3) e-10                | 2.262          | 0.042                | FSRQ                   |
| 3            | <a href="#">LC Explorer</a> | 2FGLJ0112.1+2245 | S2 0109+22   | 01 12 07.7    | +22 45 49.2  | (71.3±/-3.2) e-10              | 2.066          | 0.028                | BL Lac                 |
| 4            | <a href="#">LC Explorer</a> | 2FGLJ0112.8+3208 | 4C 31.03     | 01 12 49.6    | +32 08 19.1  | (45.6±/-2.6) e-10              | 2.31           | 0.033                | FSRQ                   |
| 5            | <a href="#">LC Explorer</a> | 2FGLJ0118.8-2142 | PKS 0116-219 | 01 18 53.8    | -21 42 22.3  | (43.3±/-2.6) e-10              | 2.122          | 0.057                | FSRQ                   |
| 6            | <a href="#">LC Explorer</a> | 2FGLJ0120.4-2700 | PKS 0118-272 | 01 20 29.7    | -27 00 53.6  | (43.5±/-2.6) e-10              | 1.927          | 0.039                | BL Lac                 |
| 7            | <a href="#">LC Explorer</a> | 2FGLJ0136.5+3905 | B3 0133+388  | 01 36 34.3    | +39 05 21.0  | (45.3±/-2.6) e-10              | 1.692          | 0.041                | BL Lac                 |
| 8            | <a href="#">LC Explorer</a> | 2FGLJ0136.9+4751 | OC 457       | 01 36 57.4    | +47 51 39.5  | (72±/-3.2) e-10                | 2.148          | 0.041                | FSRQ                   |
| 9            | <a href="#">LC Explorer</a> | 2FGLJ0210.7-5102 | PKS 0208-512 | 02 10 46.9    | -51 02 04.3  | (37.9±/-2.4) e-10              | 2.395          | 0.036                | AGU                    |
| 10           | <a href="#">LC Explorer</a> | 2FGLJ0217.9+0143 | PKS 0215+015 | 02 17 55.9    | +01 43 48.9  | (56.6±/-2.9) e-10              | 2.152          | 0.031                | FSRQ                   |
| 11           | <a href="#">LC Explorer</a> | 2FGLJ0221.0+3555 | S4 0218+35   | 02 21 04.0    | +35 55 49.1  | (53±/-2.8) e-10                | 2.275          | 0.038                | FSRQ                   |
| 12           | <a href="#">LC Explorer</a> | 2FGLJ0222.6+4302 | 3C 66A       | 02 22 38.8    | +43 02 08.9  | (256±/-6.1) e-10               | 1.847          | 0.024                | BL Lac                 |
| 13           | <a href="#">LC Explorer</a> | 2FGLJ0237.8+2846 | 4C +28.07    | 02 37 53.0    | +28 46 39.2  | (37.7±/-2.5) e-10              | 2.158          | 0.061                | FSRQ                   |
| 14           | <a href="#">LC Explorer</a> | 2FGLJ0238.7+1637 | AO 0235+164  | 02 38 42.0    | +16 37 26.6  | (187±/-5.1) e-10               | 2.023          | 0.025                | BL Lac                 |
| 15           | <a href="#">LC Explorer</a> | 2FGLJ0245.9-4652 | PKS 0244-470 | 02 45 54.5    | -46 52 14.5  | (45.4±/-2.5) e-10              | 2.434          | 0.03                 | FSRQ                   |





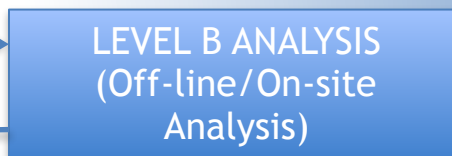
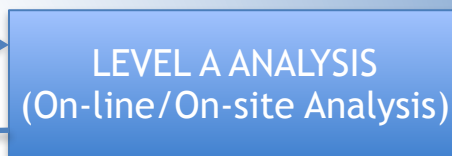
# FERMI SCIENCE ARCHIVE



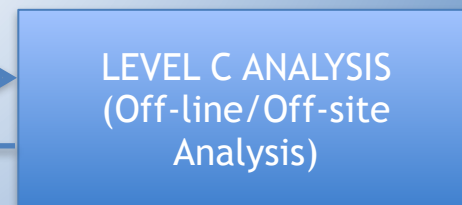
Photon data in  
circular region  
retrieval and  
**data preview**  
with MW  
catalogs overlay.

# ASTRI/MINI-ARRAY SCIENCE ARCHIVES

ASTRI is an INAF end-to-end project aimed at the realization of a prototype of a dual-mirror Cherenkov Telescope and of a mini array of 9 of such a telescopes. The Project is inclusive of a complete *Data Handling System* and foresees an **ASTRI Data Center**.

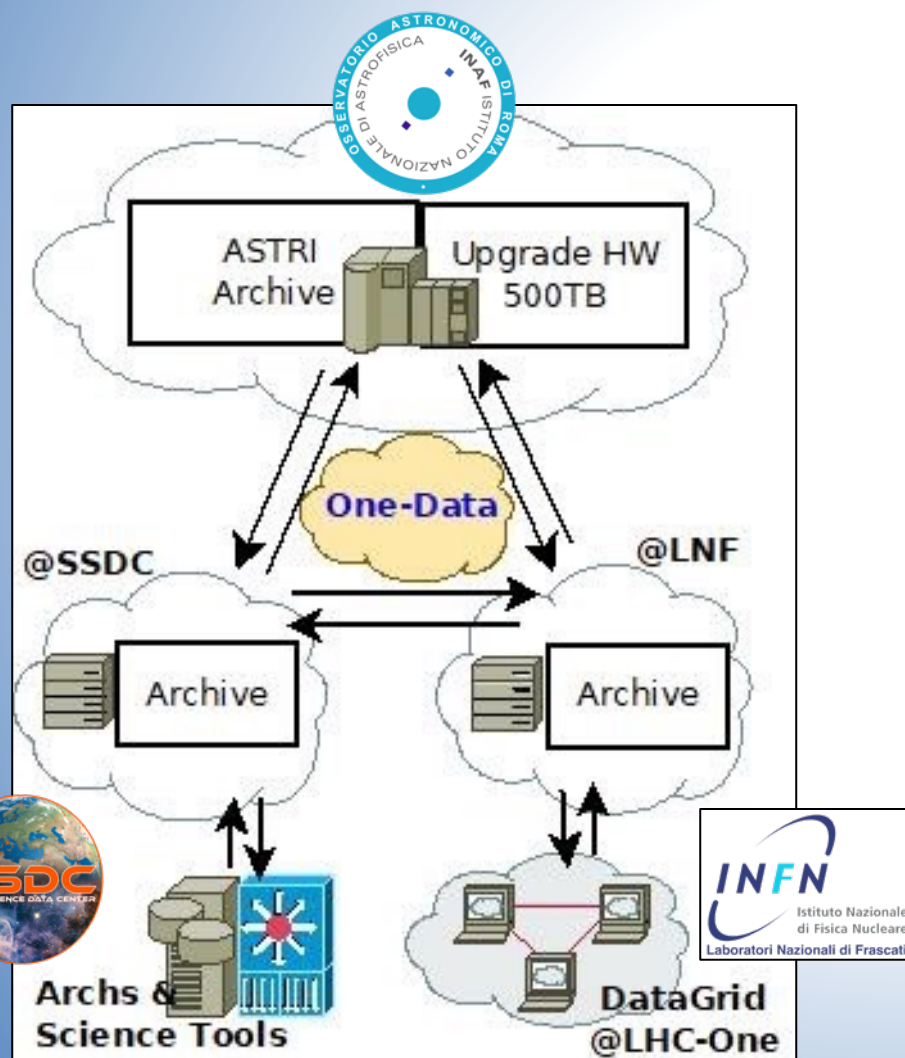


**OBSERVATORY  
DATA CENTER (Rome)**



# ASTRI/MINI-ARRAY SCIENCE ARCHIVES

## *ASTRI Data Center*

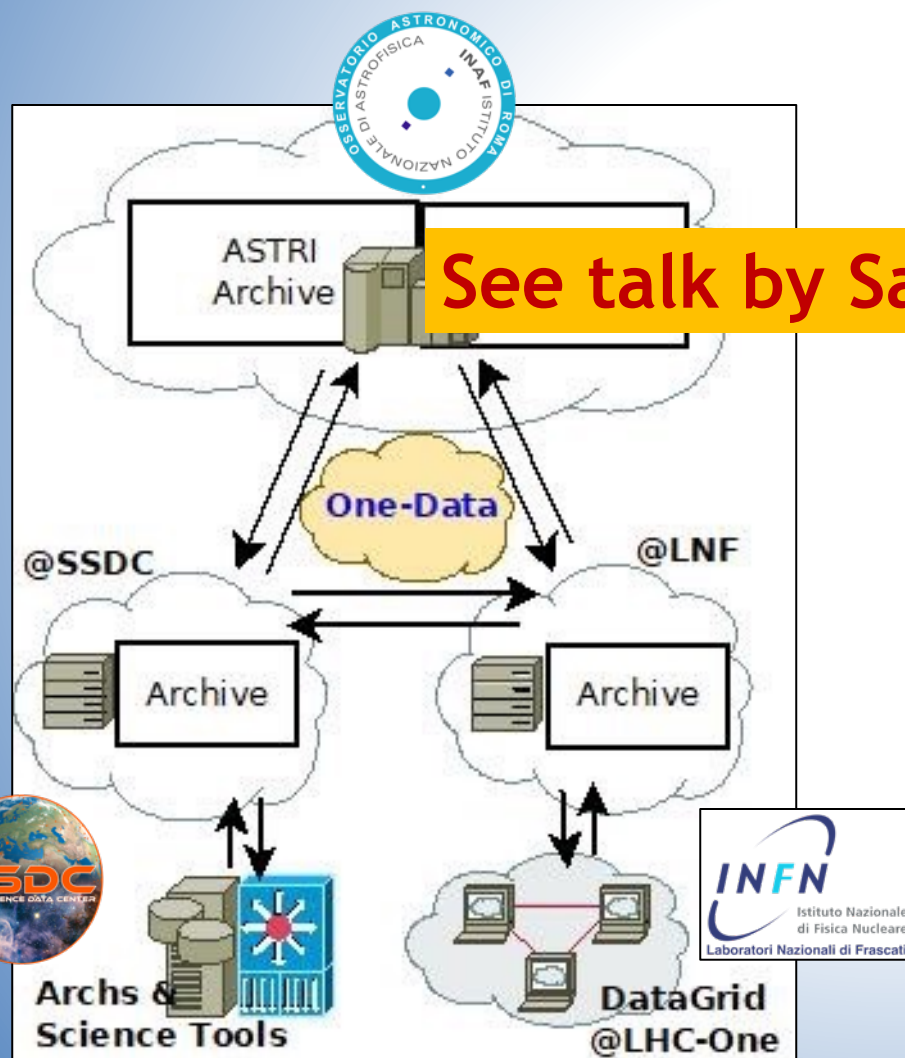


- **Pipelines** developed in INAF and SSDC also within **H2020 Project ASTERICS** in a end-to-end approach.
- **Archive concept:** developed within the **H2020 Project INDIGO-DataCloud** as a distributed archive.
- Data already present in the Archive: ASTRI MC data, real data from ASTRI prot., scientific simulations from ACDC.
- **3 sites involved:** **@INAF-OAR** (as main archive of ASTRI prototype), **@INFN-LNF** to access the GRID, **@SSDC-ASI** to provide final user with a data access in a scientific & MWL environment.
- **Science Gateway:** to provide access to users from the preparation and submission of Observing Proposals to final scientific data.



# ASTRI/MINI-ARRAY SCIENCE ARCHIVES

## ASTRI Data Center

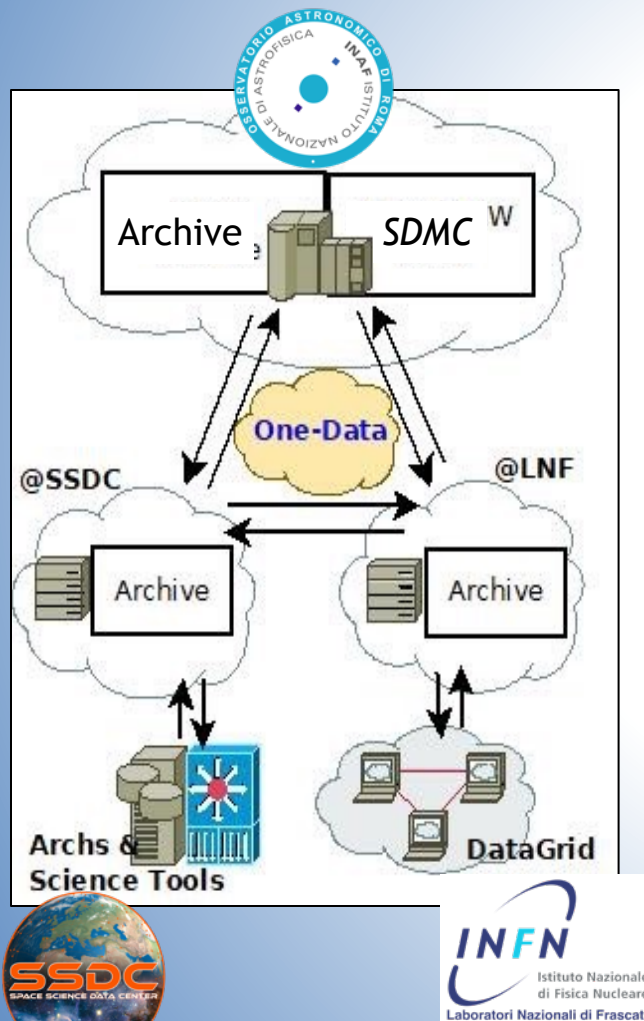


**See talk by Saverio Lombardi**

- **Pipelines** developed in INAF and SSDC also within **H2020 Project ASTERICS** in a end-to-end approach
- **Developed within the DataCloud** as a distributed archive.
- Data already present in the Archive: ASTRI MC data, real data from ASTRI prot., scientific simulations from ACDC.
- **3 sites involved:** **@INAF-OAR** (as main archive of ASTRI prototype), **@INFN-LNF** to access the GRID, **@SSDC-ASI** to provide final user with a data access in a scientific & MWL environment.
- **Science Gateway:** to provide access to users from the preparation and submission of Observing Proposals to final scientific data.

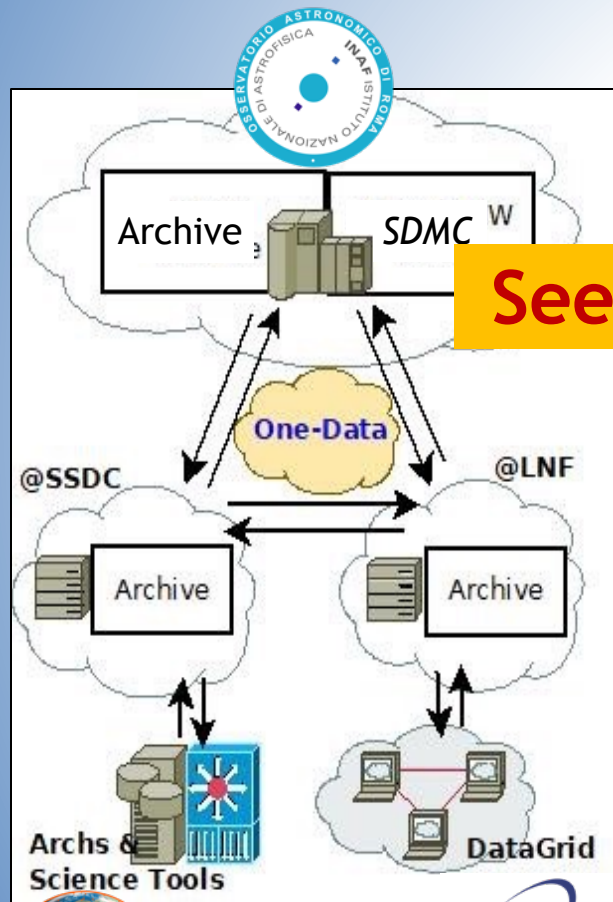


# CTA SCIENCE ARCHIVE



- The concept for a **Distributed Archive** has been developed within the **H2020 Project INDIGO-DataCloud** for the ASTRI/CTA and is under testing by using both the INAF prototype and the mini-array data.
- **3 sites:** **@INAF-OAR** as SDMC, **@INFN-LNF** to be on the GRID, **@SSDC-ASI** to provide data access in a scientific & MWL environment.
- **CTA clients & End Users** will be able to access to the three-node federated storage with One Data interfaces → export repository with **Users A&A** provided by **INAF OACT**

# CTA SCIENCE ARCHIVE



**See talk by Stefano Gallozzi**

- The concept for a **Distributed Archive** has been developed within the **H2020 Project INDIGO-DataCloud** for the ASTRI/CTA and is under testing by using both the INAF prototype
- **3 sites:** @INAF-OAR as SDMC, @INFN-LNF to be on the GRID, @SSDC-ASI to provide data access in a scientific & MWL environment.
- **CTA clients & End Users** will be able to access to the three-node federated storage with One Data interfaces → export repository with **Users A&A** provided by **INAF OACT**

- INAF, through the National Division for **High Energy Astrophysics** of the Scientific Directorate (**UTG-III**) is widely and deeply involved in space and ground based projects
- INAF UTG-III **archive activities** for High Energy Astrophysics based at the ASI **Space Science Data Center** (SSDC) in Rome
- SSDC hosts the **science archives** of several high energy observatories (e.g. *BeppoSAX*, *Swift*, *NuSTAR*, *AGILE*, *Fermi*, *ASTRI*) with the mission to ensure their **long term preservation** and **distribution** to the astronomical community
- The SSDC Multi-Mission Archive offers a uniform user interface to provide 1) direct **data access**, 2) a **preview of high level scientific products** and 3) several **on-line** applications for the **interactive scientific analysis** (→data scientific return)