

# 13<sup>th</sup> ESAC SAS Workshop

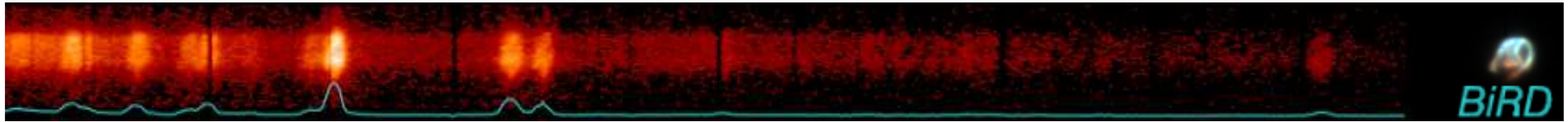
## 10<sup>th</sup> – 14<sup>th</sup> June 2013

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### BiRD: A Browsing Interface for RGS Data

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ESAC



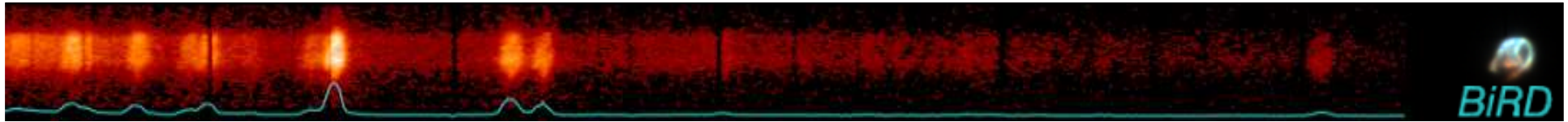
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The XMM–Newton Science Archive (XSA) contains more than 9000 RGS observations of more than 3000 different astronomical objects.

All these datasets have been processed with the most up-to-date version of software and calibration files.

Data were processed with the SAS metatask **rgsproc**:

- ▶ target coordinates are taken from the XMM–Newton proposal
- ▶ the spectrum is extracted using 100% of the spatial PSF
- ▶ a model background spectrum (as generated with the SAS task **rgsbkgmodel**) is used for the background correction
- ▶ response matrices are computed for each spectrum with **rgsrmfgen**, and a fluxed spectrum was created for each observation combining all the available first order spectra with **rgsfluxer**



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This large dataset of

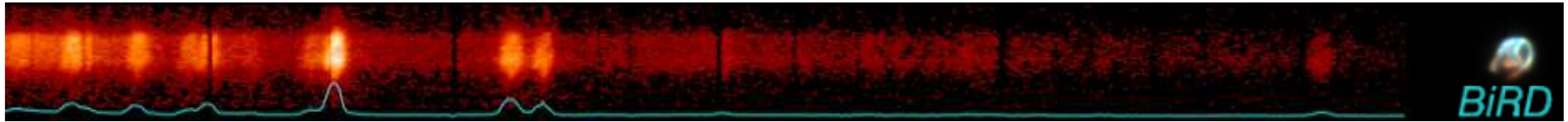
**uniformly processed and calibrated in physical units**

can be accessed through **BiRD** (Browsing Interface for RGS Data) at

<http://xmm.esac.esa.int/BiRD/>

**BiRD** allows the user to browse and examine the data before downloading them from the XSA for full analysis.

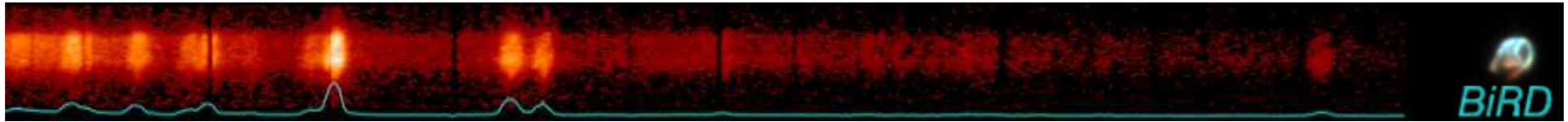
Spectra can be selected through several parameters, such as e.g. date of observation, quality, type of object ...



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**BiRD** gives:

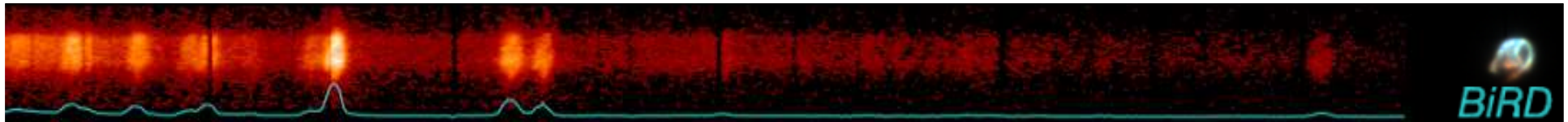
- Target name and coordinates as given in the XMM–Newton proposal
- Observation start time
- RGS effective exposure time
- An estimation of the quality of the fluxed spectrum
- Galactic Hydrogen column density
- From SIMBAD: Name, Coordinates, Type of object and redshift
- Links to:
  - ◆ SIMBAD
  - ◆ XMM On–Line–Browser
  - ◆ XSA Postcard Server
  - ◆ XMM List of Publications (from the GOF)



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**BiRD** also includes plotting and visualization utilities, both for the RGS spectra and spectral images, as well as for the EPIC-pn images taken in parallel:

- ▶ Choice of units, binning and smoothing
- ▶ On-line correction for redshift and interstellar absorption
- ▶ Plot of the average of the selected spectra



RGS Spectra database - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

RGS Spectra database

**Main**

Object ID:

Position: RA:  :  :  Dec:  :  :  Radius: 5.0 arcmin

Obs. Date:  to

[ObsID List](#)

**Object Type**

Hide

Wavelength Composite Solar System **Nebula** Stars Galaxies

**Nebula**

Reflection Nebula (3)  
SuperNova Remnant (285)  
HI (neutral) region (8)  
Dark Nebula (15)  
Cometary Globule (3)

**Filters**

Hide

quality  :   
NH  :   
Z  :   
Exp. time  :

**Output Options**

☐ Simbad Name ☐ Simbad Type ☐ Simbad Coord. ☐ Obs. Start ☐ Duration ☐ Quality ☐ NH ☐ Redshift

Submit Reset

Search by:

- Object name
- Coordinates
- Observing date
- Observation Id

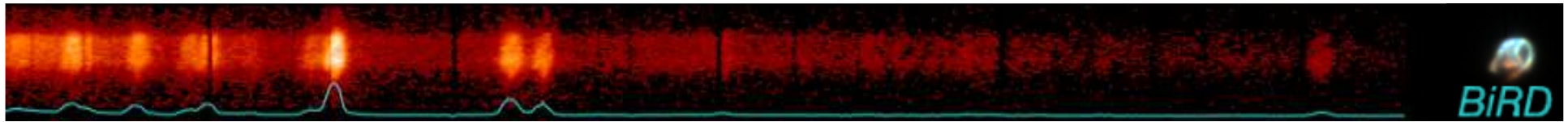
Selection by SIMBAD  
type of object

Additional search  
criteria:

- Quality
- Hydrogen Column
- Redshift
- Exposure time

Optional output fields:

- Simbad name
- Simbad Type
- Simbad Coordinates
- Observation date
- Exposure time
- Quality
- Hydrogen Column
- Redshift



RGS Spectra database - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

RGS Spectra database

**Main**

Object ID:  [ObsID List](#)

Position: RA:  :  :  Dec:  :  :  Radius:  arcmin

Obs. Date  to

**Object Type**

Show

**Filters**

Show

**Output Options**

☐ Simbad Name ☐ Simbad Type ☐ Simbad Coord. ☒ Obs. Start ☒ Duration ☒ Quality ☐ NH ☐ Redshift

Submit Reset

Nr. of records found: 7

with ☐ Galactic NH correction ☐ Redshift correction

	Obsid	Object	Coordinates	Obs. Start	Duration	Quality	RGS	PN
<input checked="" type="checkbox"/>	<a href="#">0121500301</a>	<a href="#">Capella -5 arcmin</a>	<a href="#">05:17:09.6 +46:00:43.2</a>	2000-03-23 21:25:35	18870	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>
<input checked="" type="checkbox"/>	<a href="#">0121500401</a>	<a href="#">Capella +5 arcmin</a>	<a href="#">05:16:12.7 +45:58:58.8</a>	2000-03-24 06:18:03	19215	9	<a href="#">Spectrum</a> <a href="#">Image</a>	
<input checked="" type="checkbox"/>	<a href="#">0121920101</a>	<a href="#">Capella</a>	<a href="#">05:16:41.0 +46:00:14.0</a>	2000-03-25 11:36:59	52374	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>
<input checked="" type="checkbox"/>	<a href="#">0134720101</a>	<a href="#">Capella</a>	<a href="#">05:16:41.0 +46:00:14.0</a>	2001-03-15 19:19:40	29629	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>
<input checked="" type="checkbox"/>	<a href="#">0134720401</a>	<a href="#">Capella</a>	<a href="#">05:16:41.4 +45:59:52.8</a>	2002-10-05 18:56:28	31455	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>
<input checked="" type="checkbox"/>	<a href="#">0134720801</a>	<a href="#">Capella</a>	<a href="#">05:16:41.4 +45:59:52.8</a>	2004-04-01 19:59:01	32004	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>
<input checked="" type="checkbox"/>	<a href="#">0134721501</a>	<a href="#">Capella</a>	<a href="#">05:16:41.4 +45:59:52.8</a>	2004-09-10 20:14:17	67190	9	<a href="#">Spectrum</a> <a href="#">Image</a>	<a href="#">Image</a>

Simbad  
search by  
coordinates

Simbad  
search by  
target  
name

On-line  
browser

XSA postcard  
server

List of publications

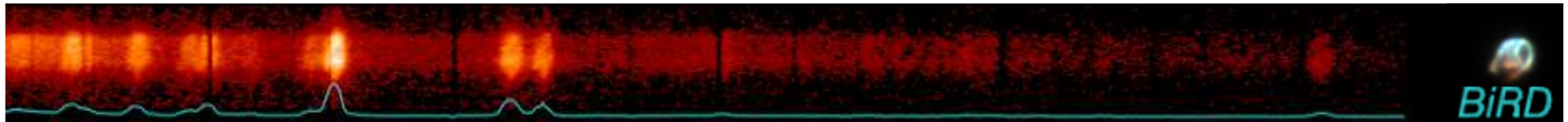
Spectrum  
plot

Spectral  
image

X-ray  
image

X-ray  
color  
image





The XMM-Newton Postcard Server - Mozilla Firefox

**XMM-NEWTON SCIENCE ARCHIVE**

The XMM-Newton Postcard Server

Get ODF data for the whole observation (might take long) | Get PPS data for the whole observation (might take long)

The XMM-Newton Data File Handbook | The SAS User's Guide | XMM-Newton calibration pages

Check for Publications for this observation

Target name Capella	RA(J2000) 79.170849	DEC(J2000) 46.802186
Start time 2001-03-15 19:19:40.0	End time 2001-03-16 03:51:25.0	On time (s) 30705
Observation ID 0134720101	SAS version SAS Version Multiple	Proprietary Expiry Date Mar 15 2001

Exposure Number: S003  
Instrument: MOS1 Filter: Thick  
Duration (s): 30225  
Mode: Large Window

Exposure Number: S004  
Instrument: MOS2 Filter: Thick  
Duration (s): 30226  
Mode: Large Window

Exposure Number: S005  
Instrument: EPN Filter: Calibration Thick  
Duration (s): 29299  
Mode: Small Window

Target Name: Capella  
Obs Duration (sec): 30705  
Dec (J2000): 46.802186  
Pos Angle: 0.0

Exp ID	Instrument	Filter	Exp Start Time	Exp End Time	Scheduled Duration (sec)	Perfor Duration
003	MOS1	Full Frame	2000-03-25@11:35:46	2000-03-26@02:54:10	0054	RG81
004	MOS2	Full Frame	2000-03-25@13:44:35	2000-03-26@01:27:29	41994	2892
005	EPN	Small Window	2000-03-25@14:46:10	2000-03-26@02:29:04	41994	
007	RG81	Spectroscopy	2000-03-25@17:12:50	2000-03-26@01:53:24	46003	31179
008	RG82	Spectroscopy	2000-03-25@11:36:33	2000-03-26@02:54:09	54954	54954
006	CM	Full High	2000-03-25@11:37:15	2000-03-25@16:10:52	54954	54954
008	CM	Full High	2000-03-25@16:11:35	2000-03-25@20:45:12	4000	0
009	CM	Full High	2000-03-25@20:45:55	2000-03-26@01:19:32	4000	0

General Observation Comments

SIMBAD query result

Coordinate query | Criteria query | Bibliography query | Script submission | Output options | Help

Variable of RS CVn type

query around with radius 10 arcmin

05 16 41.3591 +45 59 52.7

XMM-Newton Publications Info - Mozilla Firefox

XMM-Newton Publications Info

XMM-Newton Publications for 0121920101

Reference	Author(s)	Title
<a href="#">2001A&amp;A...365L.329A</a>	Audard, M. et al.	The XMM-Newton view of stellar coronae: High-resolution X-ray spectroscopy of Capella
<a href="#">2003A&amp;A...398.1137A</a>	Audard, M. et al.	A study of coronal abundances in RS CVn binaries
<a href="#">2003A&amp;A...407...347N</a>	Ness, J.-U. et al.	Are stellar coronae optically thin in X-rays? A systematic investigation of opacity effects
<a href="#">2003ApJ...598.1277N</a>	Ness, Jan-Uwe et al.	Modeling the Ne IX Triplet Spectral Region of Capella with the Chandra and XMM-Newton Gratings

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