

14th ESAC SAS Workshop

2nd - 6th June 2014



BiRD: **A Browsing Interface for RGS Data**



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The XMM-Newton Science Archive (XSA) contains more than **10000** 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**

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 ...

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)

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:

Obs. Date to

Object Type

Filters

Output Options

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

Nr. of records found: 7

with ☐ Galactic NH correction ☐ Redshift correction

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

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

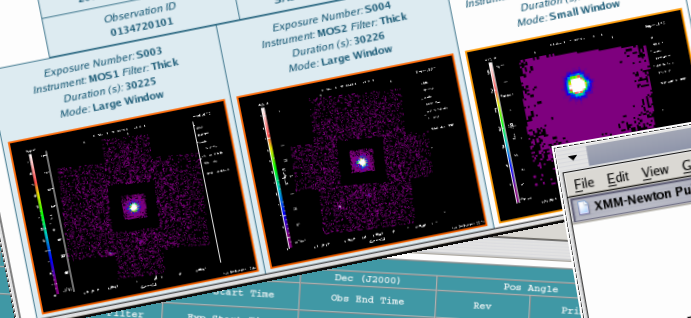
Sources identified in this observation

Target name Capella	RA(J2000) 79.170849	DEC(J2000) 46.002186
Start time 2001-03-15 19:19:40.0	End time 2001-03-16 03:51:25.0	Online (s) 30705
Observation ID 0134720101	SAS version Multiple	Proprietary Expiry Date Mar 15 2001

Exposure Number: 5003
Instrument: MOS1 Filter: Thick
Duration (s): 30225
Mode: Large Window

Exposure Number: 5004
Instrument: MOS2 Filter: Thick
Duration (s): 30226
Mode: Large Window

Exposure Number: 5005
Instrument: EPN Filter: Calibration Thick
Duration (s): 29299
Mode: Small Window



Target Name: Capella
Obs Duration (sec): 30225
Exp ID: 0134720101

Exp ID	Instrument	Filter	Mode	Start Time	End Time	Rev	Pos Angle	Period
003	MOS1	Full Frame	MEDIUM FILTER	2000-03-25@11:35:46	2000-03-26@02:54:10	0054		
004	MOS2	Full Frame	THICK FILTER	2000-03-25@13:44:35	2000-03-26@01:27:29	41994		2892
005	pn	Small Window	MEDIUM FILTER	2000-03-25@14:46:10	2000-03-26@02:29:04	41994		
007	RGS1	Spectroscopy	NOT APPLICABLE	2000-03-25@17:12:50	2000-03-26@01:53:24	46003		31175
008	RGS2	Spectroscopy	NOT APPLICABLE	2000-03-25@11:36:33	2000-03-26@02:54:09	54954		54954
006	OM	Full High	BLOCKED	2000-03-25@11:37:15	2000-03-26@02:54:09	54954		54954
008	OM	Full High	BLOCKED	2000-03-25@11:37:15	2000-03-25@16:10:52	4000		0
009	OM	Full High	BLOCKED	2000-03-25@20:45:12	2000-03-25@20:45:12	4000		0
009	OM	Full High	BLOCKED	2000-03-25@20:45:12	2000-03-26@01:19:32	4000		0

General Observation Comments

SIMBAD query result - Mozilla Firefox

SIMBAD query result

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

ME CAPELLA

C.D.S. - SIMBAD4 rel 1.024 - 2007.04.18CEST12:13:01

Basic data | Identifiers | Plot & images | Bibliography | Measurements | External archives | Notes

query around with radius 10 arcmin

-- Variable of RS CVn type

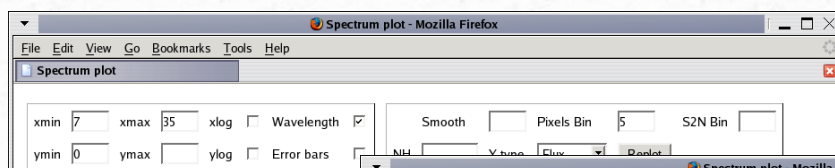
RS* O, *
(*, AG, BD, CST, GC, GCRV, GEN#, GJ, HD, HIC, HIP, HR, JF11, N30, PLX, PNC, PPN, S40, SKY9, UBV, unby98, ...)
(IE, ZE, H, RE, RX, IXSS), UV (CEL, ZEIVE, EUVE, 2RE, ID1), ** (**, ADS, CCM, ...)
(CABS, CCABS, SBC7), PM* (CI, LIT, NLIT), IR (IRAS, ITC, ...)

XMM-Newton Publications Info - Mozilla Firefox

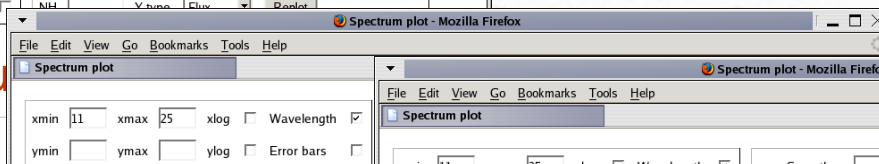
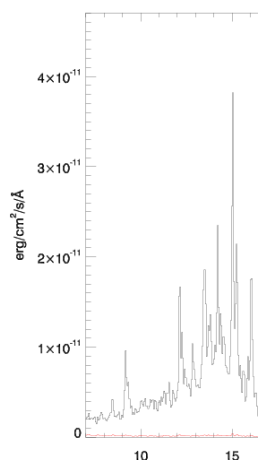
XMM-Newton Publications for 0121920101

Reference	Author(s)	Title
2001A&A...365L.329A	Audard, M. et al.	The XMM-Newton view of stellar coronae: High-resolution X-ray spectroscopy of Capella
2003A&A...398L.1137A	Audard, M. et al.	A study of coronal abundances in RS CVn binaries
2003A&A...407L.347N	Ness, J.-U. et al.	Are stellar coronae optically thin in X-rays? A systematic investigation of opacity effects
2003ApJ...598L.1277N	Ness, Jan-Uwe et al.	Modeling the Ne IX Triplet Spectral Region of Capella with the Chandra and XMM-Newton Gratings

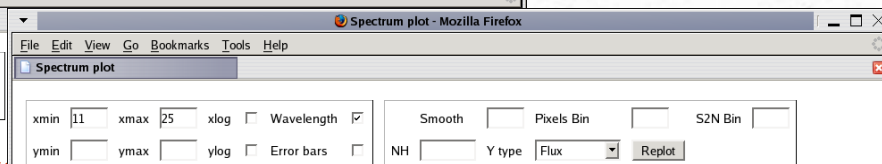
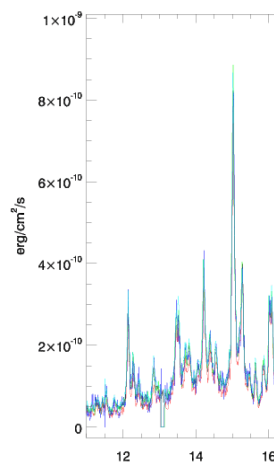
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Single Spectrum



Multiple Spectra



Average Plot

