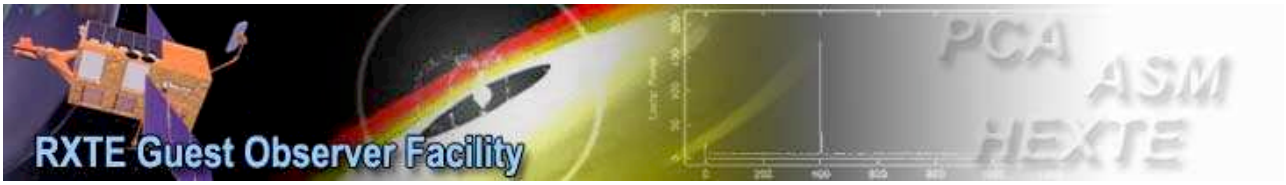

The ABC of XTE

Introduction

Postscript version of this chapter

- Scope
- RXTE Data Reduction: The Basic Scheme
- How this Guide is Organized and How to Use it
- Obtaining Help and Information, Reporting Bugs, etc.

Scope

This Guide tells you what you need to know to reduce RXTE data. By reduce, we mean the preparation of data for analysis, which for RXTE entails knowing:

- **How your data are organized in files and how to find the files you want.**
- **How the instrument, mode and configuration determine the nature of your data.**
- **How to run the reduction software to screen and extract the data you want to analyze.**
- **How to apply calibrations to your data.**

Data analysis, i.e. the derivation of scientific results from the data products, is covered elsewhere, although the chapters on spectra and light curves do show how to get started on your analysis.

RXTE Data Reduction: The Basic Scheme

Between receiving RXTE data from the ground station and sending the data to Guest Observers, the RXTE data processing pipeline converts the data to **FITS format**, arranges the FITS files into a hierarchical set of directories, and performs a set of standard calibrations.

RXTE data reduction involves first navigating the directory structure with the GUI-driven program **XDF** (XTE Data Finder) to identify the files which contain the data you want to reduce. Next, you manipulate these FITS files by a set of tasks, called **ftools**. The ftools may also be used to produce a **filter file** that contains the time-histories of various parameters, in reference to which good data can be identified and screened. Using a filter file for the observation, you can produce a list of good time intervals based on various selection criteria you apply. At this stage, you can also specify filters to single out parts of the good data. The final step is to apply the good time intervals and extract data products (light curves or spectra) through the filters. These products can be read into the appropriate data analysis programs (e.g. xronos, xspec - or any others equipped to handle the formats).

How this Guide is Organized and How to Use it

The Overall Scheme

RXTE might seem at first to be a very complicated mission. Not only are the two PI instruments, the PCA and HEXTE, modular, but they can each produce data in an almost endless variety of modes. Fortunately, when you get your data tape, you'll find that the only modes present are the ones you chose for your proposal, plus the so-called "standard modes". Moreover, RXTE science data are packaged in just two broad classes, science array and science event, and only two extractor tools are needed.

The Order and Arrangement of Chapters

After this introduction, comes a chapter dealing with the basic structure of the various RXTE FITS files. Not an exhaustive description of the files and keywords, the chapter focuses instead on the properties of the files that you need to know in order to reduce and analyze your data effectively.

The next chapter describes those aspects of the PCA that pertain to data reduction. Like the chapter on FITS files, the aim is to enable you to understand the properties of your data.

Screening, i.e. getting rid of unwanted or invalid data, is covered in the next chapter which is followed by the chapter on extracting light curves and spectra. A tutorial on how time is defined for RXTE ends this current version.

How to Use this Guide

Before the *ABC of XTE*, you should read the ***RXTE Getting Started Guide***.

If you are familiar with ASCA data reduction, please read this **footnote** which discusses the similarities and crucial differences between ASCA and RXTE data reduction.

The *ABC of XTE* is intended as a comprehensive reference on RXTE data reduction. ***The RXTE Cook Book*** provides easy-to-use recipes for basic and advanced data reduction tasks.

Obtaining Help and Information, Reporting Bugs, Submitting Comments, Receiving Updates

Xtehelp

The **FTOOLS** software package, including **XSPEC** and **XRONOS** tools, are all equipped with extensive on-line help, but if you cannot find the answer to your software question, please use our **Feedback** form. Make sure you select **RXTE** from the pulldown menu, to ensure your question gets sent to the RXTE helpdesk.

This is also the email address to which you should send bug reports and comments.

Xtenews

Information about software and calibration updates, bug fixes and enhancements is promulgated via the **xtenews** email exploder. If you would like to be added to the **xtenews** mailing list, please go to the following Web page and follow the instructions there:

https://lists.nasa.gov/mailman/listinfo/xtenews

- **Scope**
- **RXTE Data Reduction: The Basic Scheme**
- **How this Guide is Organized and How to Use it**
- **Obtaining Help and Information, Reporting Bugs, etc.**

Please proceed to the *Data Files* chapter. Or return to the *Table of Contents.*

The ABC of XTE *is written and maintained by the* ***RXTE GOF****. Please email* ***xtehelp@athena.gsfc.nasa.gov*** *if you have any questions or comments. This particular page was last modified on Wednesday, 04-Apr-2012 14:45:08 EDT.*