17 January 2024, *The 2nd XRISM Community Workshop, University of Maryland College Park (USA)*

Make your XRISM feasibility study #1

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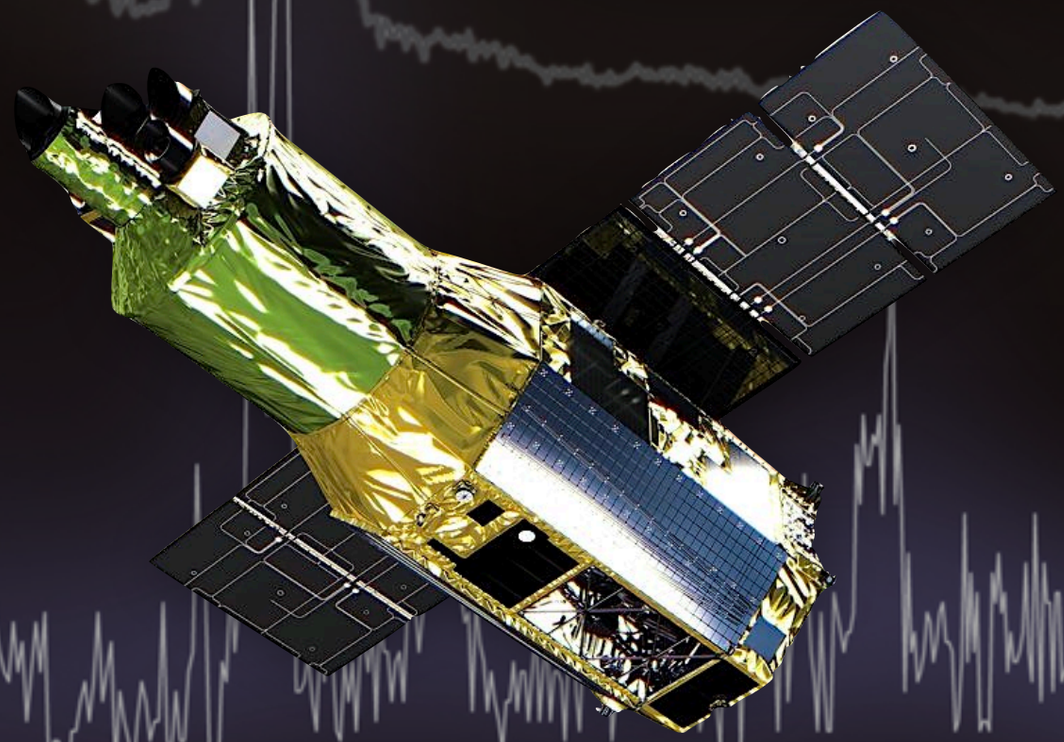

What this tutorial will cover

OUR AWESOME XRISM PROPOSAL

Abstract

This is our abstract for our awesome XRISM GO Cycle 1 proposal. Don't you think it is awesome? Personally we do. Please give us 5 Ms on my favorite source, it's worth it we promise!

1 Introduction

The science we are doing is awesome. However there are many open questions that only XRISM will be able to answer. Which is why we need XRISM data.

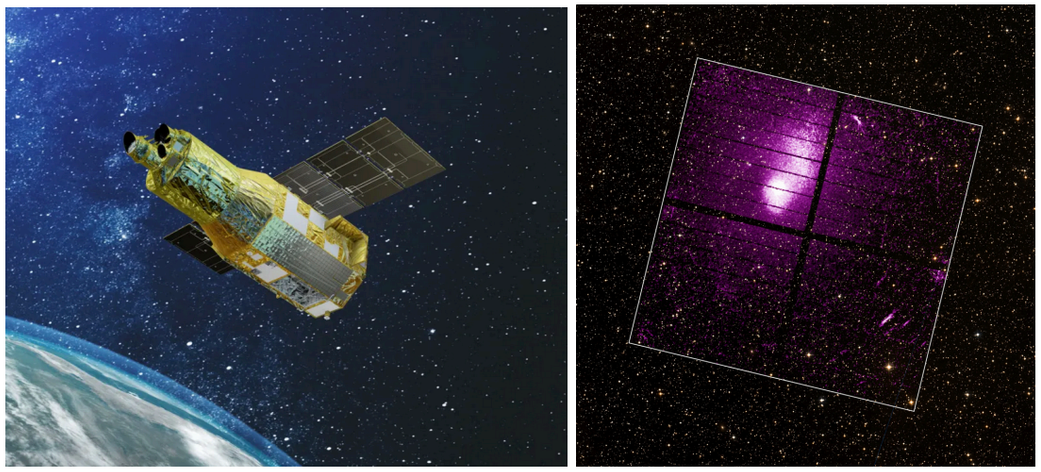

Figure 1: *Left:* This is an artistic representation of XRISM. Beautiful, isn't it? *Right:* This is the Xtend pointing as revealed publicly on Jan 5, 2024. What a fantastic dataset!

2 Scientific objectives

The science goals we propose are the following:

1. We will measure some subtle things with XRISM (spectral features with Resolve and cover a wide field of view with Xtend).
2. This will allow us to revolutionize our field of research.
3. Eventually, the proposed research will allow us to get the Nobel Prize next year. All this thanks to XRISM!

The unique capabilities of XRISM (through the exquisite spectral resolution of Resolve and the very large field of view of Xtend) are absolutely essential to fulfill our scientific goals.

3 Technical feasibility

???

What this tutorial will cover

✓ Perform a (simple) estimate of a **source flux** using WebPIMMs

✓ Download XRISM **response files** and load them into XSPEC

✓ Use **fakeit** to simulate mock XRISM spectra

✓ Perform **error** calculations and adapt your exposure time

Setting the stage…

Let's assume the following science case:

✓ You want to detect a key line with >5σ significance in a power-law shaped source previously detected with Chandra ACIS-S.

➡ **How much XRISM exposure do you need?**

✓ **Flux** of the source = **???** (But you know the number of counts detected in your Chandra observation: 2437 for a 10 ks observation)

✓ Photon **index** of the power-law = **1.4**

✓ Absorbed **hydrogen column density** from the Milky Way = 2 x 10^{20} atoms/cm^2

✓ **Flux** of the line = 2.02 x 10^{-14} ergs/cm^2/s in the 2-10 keV band

✓ **Energy** of the line = 4.2 keV

Setting the stage…

Let’s go!

(No need to type your commands at the same time;
this session is recorded and will be publicly available)