

# XMM-Newton Cross Calibration And Timing Analysis

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• Introduction To XMM-Newton

## • Project

- Calibration of the MOS timing mode
- Timing analysis of the MOS timing mode
- Current Situation Of The MOS Timing Mode
- Current Situation Of The MOS Timing Analysis







## **Introduction To XMM-Newton**

## What is XMM-Newton?

XMM-Newton consists of three instruments (EPIC, RGS and OM) for simultaneous observations in the X-ray and optical/UV spectra

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## **EPIC (European Photon Imaging Camera)**

- X-ray imaging, X-ray spectroscopy and X-ray photometry
- Consists of a pn and two MOS cameras.

## **RGS (Reflection Grating Spectrometer)**

- X-ray spectroscopy
- **OM (Optical Monitor)** 
  - Optical/UV imaging and spectroscopy









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#### • The MOS Timing Mode



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## time resolution 1.75 ms









## Timing Analysis

The timing analysis aims to determine the accuracy in time of a certain event.

## Relative Timing Analysis

Aims to determine the accuracy of a periodic event such as the period of a pulsar. (Crab pulsar)



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#### Absolute Timing Analysis



*Period*<sub>0, X-ray</sub>-*Period*<sub>0, radio</sub>







# **Current Situation Of MOS Timing Mode**

#### Calibration Of The MOS Timing Mode



# **Current Situation Of MOS Timing Mode**









# **Current Situation Of MOS Timing Mode**



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# **Current Situation Of Timing Analysis**

• Relative Timing Analysis







# **Current Situation Of Timing Analysis**

• Absolute Timing Analysis









• Thank You For Your Attention!



