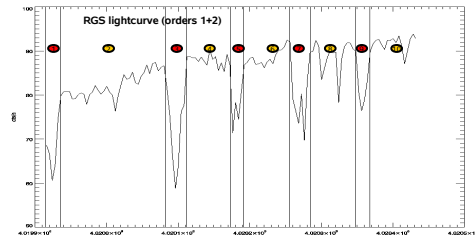




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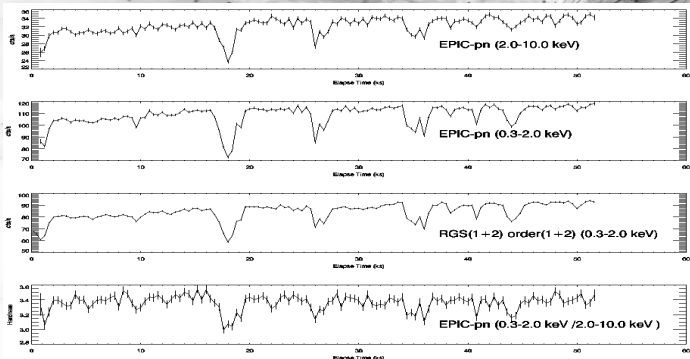
Introduction



In this plot we show the Good Time Intervals (GTIs) used to define the **dip episodes** and **out-of-dip episodes**.

These **GTIs** have been used to calculate **EPIC-pn** and **RGS** spectra in and out of dips.

Light curves



In this plot we show simultaneous EPIC-pn and RGS light curves extracted using 400s bins.

These variations recur approximately every 2.4 hrs and show irregular structure which lasts between about 5 and 40 min. Occasionally, intermittent shallower dips are also seen (Kuulkers et al. 2010).

The hardness ratio variations suggest obscuration during dips from the accretion disk.

Orbital Period

The search resulted in a period of 2hrs 24.7 min (± 15 s). The irregular dip oscillations suggest an orbital period that would make MAXI 1659-152 the shortest period black-hole binary

Spectrum

The spectrum during the gently rising emission out of the dips is reasonably well reproduced by conventional combined disk and reflection models. In the dips, there are subtle changes in the spectrum, presumably due to absorption.

Preliminary Analysis

Observation details

Analysis

Timing Analysis

RGS1 and Pile-up

Both last

Spectra

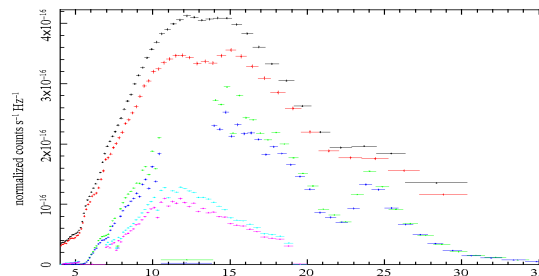
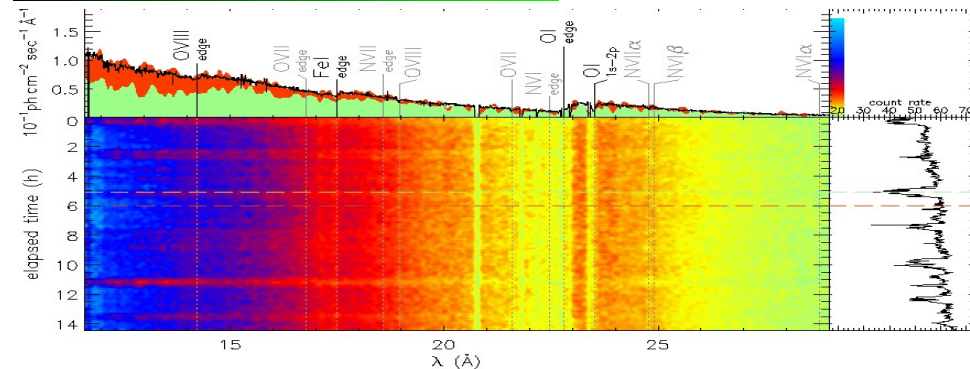
DYNAMICAL RGS SPECTRUM

In this plot we show dynamical **fluxed** spectra combining 1st and 2nd orders from both RGS instruments. The central image is a brighter

orders from both RGS instruments. The central image is a brightness map with time running down and wavelength from left to right. Two spectra have been extracted at times marked by the dashed lines, and are included with the same colour in the top.

The labels in the top panel indicate that the interstellar **O I** edge and line were clearly detected, as well as the **Fel** edge and the high-ionisation edge of **O VIII** at 14.24 Å.

Dynamical RGS spectrum



References

Kahn, D.A. 2010 A&A, 365, L1

Kennea, J.A. et al. 2010, ATel 2877
Kennea, J.A. et al. 2011, arXiv:1104.5228

Kuulkers, E. et al. 2011, arXiv:1102.2102
Kuulkers, E. et al. 2010, ATel 2912

Mangano, V. et al. 2010, GCN Circ. 11296

SUMMARY:

Detailed

