

XMM-Newton CCF Release Note

XMM-CCF-REL-158

Refinement of the Frametimes in the EPN_TIMECORR.CCF

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January 27, 2004

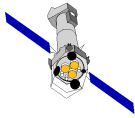
1 CCF components

Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
EPN_TIMECORR_0006	1998-01-01T00:00:00	FRAME_TIME	3.152	NO
EPN_TIMECORR_0007	1998-01-01T00:00:00 2000-02-09T11:00:00	FRAME_TIME	3.152	NO
EPN_TIMECORR_0008	2000-02-09T22:00:00 2000-03-01T00:00:00	FRAME_TIME	3.152	NO
EPN_TIMECORR_0009	2000-03-04T12:00:00 2000-03-08T15:00:00	FRAME_TIME	3.152	NO
EPN_TIMECORR_00010	2000-03-11T00:00:00 2000-03-18T00:00:00	FRAME_TIME	3.152	NO

2 Changes

The oal-3.95 will use the nominal frame times from the EPN_TIMECORR:FRAMETIME:FRAME_TIME. These times have to be as accurate as possible and therefore a change to double precision was needed. Also this values are now given as a scalar column to provide better access for the CAL.

In addition four further EPN_TIMECORR (7-10) have been created in order to take the different setting for the Extended Full Frame Mode for the revolutions 20-30, 32-41, 44, 47-50 into account. In those revolutions the parameter F1294, controlling the integration time, was set to 5 and causes a different read out time.



3 Scientific Impact of this Update

4 Estimated Scientific Quality

Figure 1 shows the significant influence of a time jump on the chi-square-distribution of epoch folding period search. The time jump causes a broadening of the chi-square-distribution and increases the presence of secondary maxima. With the new OAL the time jump is found and corrected successfully. The chi-square-distribution peaks with a higher maximum and is narrower. This is a combination of the higher time accuracy of the frame times and the improved time jump detection algorithm in the SAS.

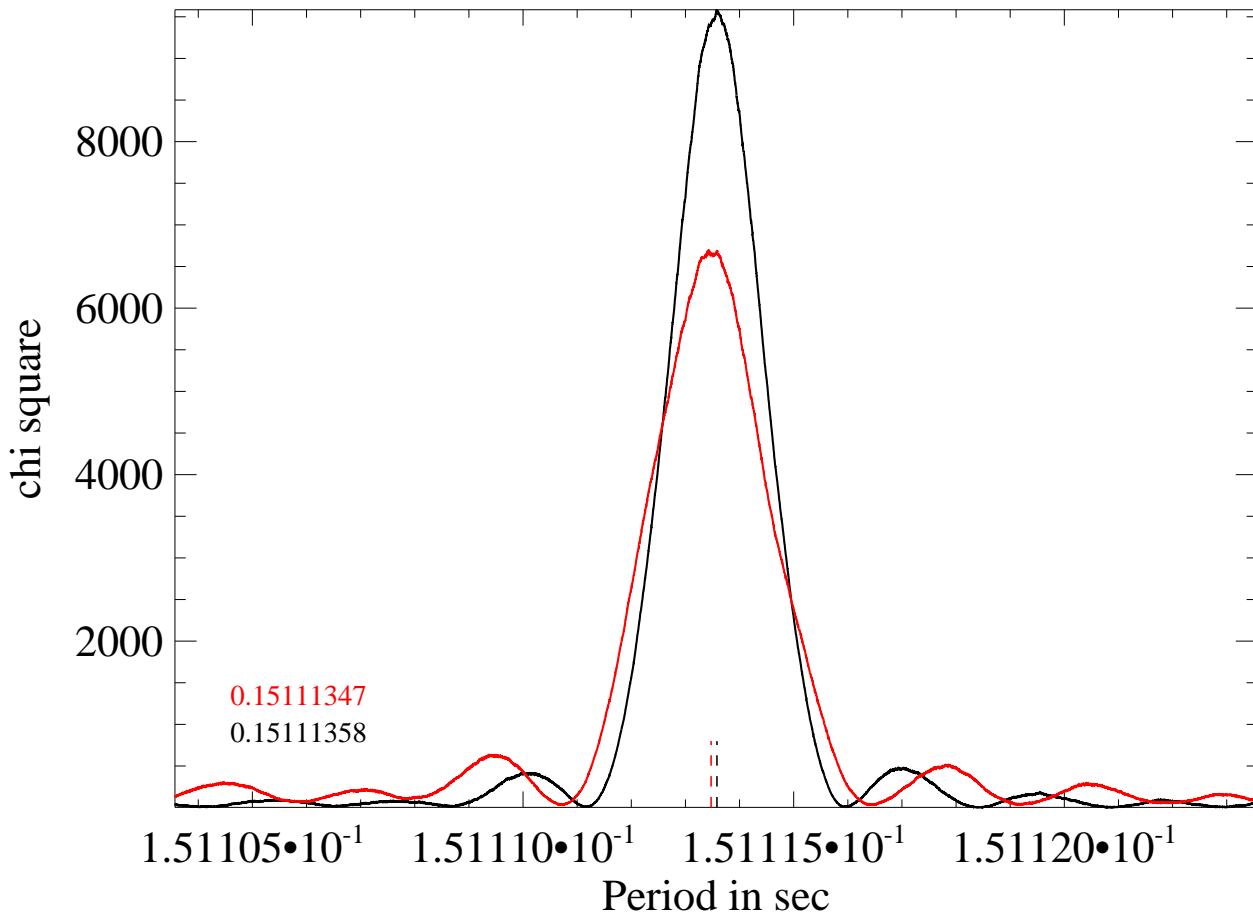
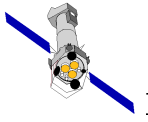


Figure 1: Chi-square-distributions of epoch folding period search for PSR B1509-58. Red: old OAL Black new OAL-3.95

5 Expected Updates

However there are still non resolved time jumps that are possibly caused by the new OAL.



6 Test procedures & results

The EPN_TIMECORR_0006 was tested on the observation 0128120401. A period search with "ef-search" was performed.

The EPN_TIMECORR_0007 - EPN_TIMECORR_0010 have been tested on observations from revolutions 20-99.

All extended FF observations have been processed correctly.

7 Expected Updates

None.