

XMM-CCF-REL-219

EPIC PN FIFO overflow deadtime parameters

R. D. Saxton

5 July 2006

1 CCF components

Name of CCF	VALDATE	EVALDATE	Blocks changed	XSCS flag
XMM_MISCDATA_0022.CCF	2000-01-01		MISCDATA	NO

2 Changes

A set of parameters have been added which record the deadtime incurred when a FIFO reset or overflow occurs in the PN camera. The deadtime is observing-mode-dependent and the following values have been set:

FIFO_DEADTIME_FF=0.22s - dead time produced by a FIFO reset in FullFrame mode
 FIFO_DEADTIME_EF=0.22s - dead time produced by a FIFO reset in ExtFF mode
 FIFO_DEADTIME_LW=0.22s - dead time produced by a FIFO reset in LargeWindow mode
 FIFO_DEADTIME_SW=0.10s - dead time produced by a FIFO reset in SmallWindow mode
 FIFO_DEADTIME_TI=0.10s - dead time produced by a FIFO reset in Timing mode
 FIFO_DEADTIME_BU=0.10s - dead time produced by a FIFO reset in Burst mode

3 Scientific Impact of this Update

These keywords are read by *epframes* and are necessary to correctly account for dead time effects incurred when FIFO resets or overflows occur. The cumulative dead time due to this effect can be significant in the case of many resets, causing the exposure time to be overestimated and hence source flux to be underestimated. *epframes* will use these values to either write GTIs (if the exact times of such FIFO resets can be reconstructed) or to reduce the FRACEXP values in the EXPOSUnn extensions.

4 Estimated Scientific Quality

The initial values are rough estimates of the true dead time losses. Additional ground-based calibrations are planned which will likely lead to revised values.

5 Test procedures and results

The new CCF file has been tested with the EPIC-pn pipeline and has been found to be compatible with the SAS.