CONSIGLIO NAZIONALE DELLE RICERCHE

ISTITUTO PER RICERCHE IN FISICA COSMICA E TECNOLOGIE RELATIVE

Notes about SAX telemetry policies

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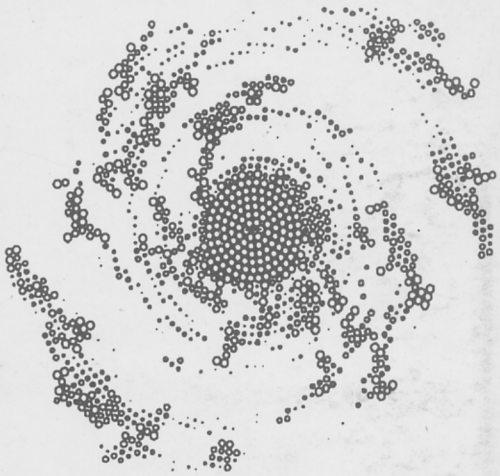

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Version 1.0

a) General comments

We refer to the general format layout described in the phase A documentation and in the phase B Ground Segment Requirements, with additional reference to the proposal by P.Cortellessa of IFCTR. This document is concerned with the floating part of the telemetry. This part includes all scientific data **and also** all HK data (s/c, p/l and AOCS) accumulated in mass memory during the non-contact period.

The floating telemetry will consist of telemetry **packets**, each packet being preceded by a suitable **header**. The header will contain the following information (bit allocations are provisional) :

Synch word	16 bits
Packet identifier	16 bits
Reference time (resolution tbd)	32 bits
Packet length	8 bits
Checksum or other security tbd	16 bits
Additional identifiers	tbd

The packet identifier will be a unique number corresponding to a given scientific application program function.

A checksum is probably enough to ensure filtering of bad data for what scientific data are concerned ; more sophisticated techniques may however be considered, particularly for critical parts in the telemetry. It should be stressed that a data loss (gap) in the scientific data could be considered quite acceptable, while other items (payload configuration history, attitude reconstruction, etc.) may require more careful handling.

Packet length can be kept small, if we allow long "logical" packets to be split into "continuation packets" in the telemetry flow.

Additional identifiers may include detector identification for multi-detector experiments (PDS,CS,WFC). Otherwise one may have no explicit detector identification, and simply split the packet in a number of subpackets (suitable for fixed frequency packets), each one corresponding to one detector in a fixed sequence. Also dead time indicators may appear here.

Alternatively one can use completely different packet identifiers (suitable for direct modes, with a buffer space overhead, or for independent experiments like WFCs).

d) Conclusion

At nominal rates the telemetry requirements are, for a complete orbit (as specified in the preceding section) :

WFC	(2x 0.75)	98 Mb
CS	(all 4)	9-11 Mb
GSPC		1.2 Mb
PDS	(all 4)	5 Mb
GSPC	timing	3.2 Mb
PDS	timing	3.2 Mb

with a total of ~ 120 Mb. These figures can be raised if increased temporal resolution is wished for GSPC and PDS modes (either spectral or temporal) (irrespective of event rate) and also if the event rate in the imaging instruments increases. No comments are given on maximum rate, awaiting for detailed experiment simulations by the hardware groups.

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