

esa

## The actual IBIS status

Ligo-Virgo-Kagra runs should cover the period May 2023-December 2024 and INTEGRAL should be operative up to end 2024

A better time resolution for PiCsIt would ensure a better exploitation of data in coincidence with GW events and also Neutrinos, FRBs, and any other result on strong transient or outburst from known objects

The actual value for the PiCsIt time resolution of the so-called spectral timing histograms (S8) is 7.8 ms → test to improve from 14.9 was performed in 2018, and implemented in 2019

For the recent BOAT GRB221009 and the magnetar SGR 1935+2144 a better time resolution would have helped to achieve a better time discrimination, position accuracy and dead time, improving the instrument and scientific outputs

- The actual value of 7.8 ms implies a factor 6.4 better than the SPI/ACS time resolution (50 ms)
- Changing to 3.9 ms would means a factor 13 better than the SPI/ACS
- Tests on short time periods (4 scws) have been performed on November 2020 and again on March 2021 and a report has been produced and circulated at that time to PS, PM and SOM
- At the moment S8 data, with the 7.8ms time resolution, are using 10 pkts on a total of 129 allocated for IBIS
- Results from test indicated (as expected) a TLM consumption of 20pkts for 3.9 ms
- Because of the insufficient TLM allocated to IBIS and to keep safe the ISGRI and Compton data, we would need to disable the S7.0/7.1 histograms, i.e PiCsIt spectral imaging data

## **Internal IBIS TLM share for the 3.9 ms test result:**

- S1= ISGRI PPM data, 70-80
- S3.0= Compton Single, 25
- S3.1= Compton Multiple, 8
- S7.0/7.1= PICsIT histo, 12/8
- S8= PiCsIT Spect. Tim, 20
- $HK1 = 1 \\ HK2/3/4 = 0.3$

In summary a total of 136/146 pkt/cycle

• We already proposed this change and the reason for not doing it was "a few papers reporting on spectral imaging data"

 INTEGRAL is now facing a 1.5 year of operative life while archived data is based on 20.5 years also for these type of data > we need a better time resolution..
See POM May 2023

We also tested 1.9 ms for 2 scw and as expected the pkt increased to 40  $\rightarrow$  that is not feasible

