Agile

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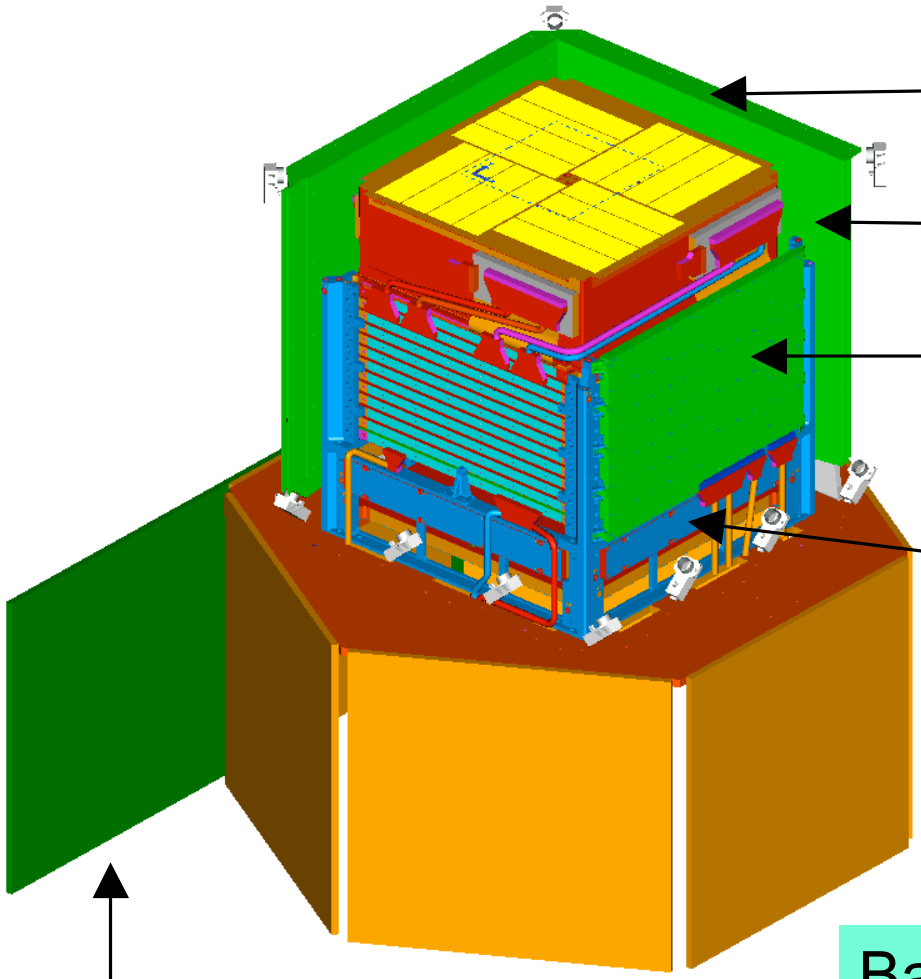
AGILE

- Agile launched on April 23, 2007
  - Indian rocket from the Shriarikota ISRO base (Chennai-Madras), India
  - Small Scientific Mission program of the Italian Space Agency (proposed in 1997)
  - Team includes INAF, INFN and Italian Universities
  - Devoted to Gamma ray Astronomy
  - Approved for a nominal duration of 2 years
- Low-inclination (2.5 deg) quasi equatorial at 540 km altitude
- Guest Observer program (1st AO 1 Oct 2007)

AGILE instruments

- Combine Gamma ray (30 MeV- 50GeV) & hard X-ray (20-60 keV)
  - GRID (Gamma Ray Imaging Detector) made of Silicon Tracker
    - Source location accuracy 5-20 arcmin, improved respect to EGRET (factor 2 at 400 MeV)
    - 3 sr FOV
    - Flux sensitivity similar to EGRET ($3x10^{-7}$ ph cm^{-2} s^{-1} >100 MeV)
    - 30 MeV -50GeV
    - Timing 2microsec
  - SA (Super Agile) 4 Silicon square units on top the GRID + coded mask
    - Source location accuracy 2-3 arcmin (GRB or transient)
    - 1 sr (FOV)
    - Flux sensitivity (15 mCrab for 50 ksec integration)
    - 20-60 keV
    - Timing 5 microsec
    - Expected GRB in the FOV 1-2 x month
- GRID and SA are co-aligned, the whole sky is visible in 6 months

AGILE Instrument



ANTICOINCIDENCE

SUPER-AGILE
(20-60 keV)

GRID { SILICON TRACKER
(30 MeV – 50 GeV)

MINI-CALORIMETER
(250 keV – 200 MeV)

MITA Bus

SOLAR PANELS

Baseline equatorial orbit: 550 Km, < 5º inclination

Agile Operation

- Agile performed long observations (~3 weeks duration x pointing direction, slowly shift 1 degree per day)
- Data arrive at Malindi station and telemetry sent to the Agile Data Center co-located with the ASI Science Data Center responsible for :
  - Standard data reduction and quick look analysis
  - Archive, maintaining the AGILE Web pages and managing of the GO program
  - Data distribution to scientific community
  - Creation of the standard products (position fluxes and daily light curves for Super Agile)
  - Publication of the Official Agile and Super Agile Source Catalog

    HTTP://AGILE.ASDC.ASI.IT
- Data arrive within 1 hour at the ASDC

Agile Observing program

- Agile AO released 1 Oct 2007 (31 October closing day)
- Open to the world wide scientific community
- Guest Observer apply for data collected in pre-defined pointings
  - 17 defined pointings
- Period covered : 1 December 2007- 30 November 2008
- Two programs Agile Team program and Guest observer
  - Both have one year proprietary time after which data are in the public archive
- Team program includes:
  - Diffuse Galactic and extragalactic radiation
  - A selected list of Gamma ray sources and new sources
  - Gamma ray bursts
- Guest observer program includes
  - Specific 3EG catalog sources , pulsars , AGN
- NOT possible to propose for TOO ,
  - but TOO can be requested any time during the mission (see http://agile.asdc.it)

AGILE Data distribution

- Data are distributed by the ASDC to the GO
- This includes data from the GRID instrument :
  - Event lists where photons have been already calibrated
  - HK and calibration data
- Data are centered on the position of the accepted Gamma ray source with a region sufficiently large to analyze the source of interest and determine the background
- GO has no right to publish results on sources that may happen to be in the area of the sky received but different from those assigned to the GO .
- Super Agile data are not part of the AO

AGILE Data Archive

- The GRID public archive includes
  - Event lists where photons have been already calibrated
  - HK and calibration data

  These are the products distributed to the GO
- The Super Agile archive consists of :
  - Source light curve (similar to RXTE)
  - Catalog of sources position and flux detected
- Software and Calibration data
- Note : There is a quick-look archive while the data are not complete for a given pointing

Agile at HEASARC (1)

- Possible collaboration
  - During the BeppoSAX era at HEASARC was created a US coordinating facility. The main aim was to provide a BeppoSAX archive in US. This facility works closely with the BeppoSAX Science Data Center (SDC) in Rome. In addition it was provided basic support to the US astronomical community for the proposal preparation and exploitation of the BeppoSAX data.

  Given the positive BeppoSAX experience the ASDC and HEASAC agree that a similar arrangement can be established within the AGILE mission. This possibility is also supported at the ASI level as part of the ongoing ASI-NASA relation.

Agile at HEASARC (2)

- The AGILE publicly distributed software and data are built within the FTOOLS environment and with the data file in FITS format following the OGIP standard. The HEASARC agrees to maintain and support the FTOOLs environment and allow the distribution of the AGILE public software within the HEADAS suite of mission specific software packages.

- The ASDC agrees to provide a copy of the AGILE public data to the HEASARC. The HEASARC agrees to provide a copy of the SUZAKU public archive (TBC). The technical agreement of the type of data, level and scheduling will be specified in a future document.