TeV sources search with AGILE

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on behalf of the AGILE team

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A systematic monitoring of known TeV $\gamma$ sources has been performed, using the full AGILE team data sample.

Due to AGILE pointings schedule, TeV sources are observed in many periods with different exposures and distances from FOV center.

For each source, the flux has been measured, in different energy ranges and the correspondent *light curves* has been produced.
The High Energy Stereoscopic System (H.E.S.S.)
MILAGRO
The Tev $\gamma$-sources default catalog

75 entries
(29 unidentified)

http://tevcat.uchicago.edu/
The AGILE gamma-ray exposure (E > 100 MeV) more than 1 yr exposure: July 2007 – 15 Sept. 2008
The AGILE gamma-ray exposure: 2 years

(Not optimal for TeV sources...!)
Analysis method (I)

Data samples: from May 24, 2007 to April 15, 2009 (690 days) grouped into 79 Observation Blocks (OB) or *pointings*.

73 sources [53 galactic, 20 extra-galactic] have useful exposition within 40° from the FOV center, for which a total of 773 *observation slots* are defined considering the various OBs [608 gal. + 165 extra].

For each *slot*, the counts maps are generated with 101x101 bins (0.15° x 0.15°), centered on the source position, using the FT3ab filter.
The multi-source Likelihood with fixed position (as given by TeVCat) is applied to each map, using a list of known strong gamma sources (EGRET, AGILE, FERMI) as input.

The significance $\sqrt{TS}$ and the Flux of the given source are computed.

The flux values (or upper limit) are obtained for:
- **73** sources with $E > 100$ MeV
- **69** " " " " $E > 400$ MeV

These results are summarized in the light-curves for each source. Some preliminary results...
Crab

0FGL J0534.6+2201
1AGL J0535+2205
3EG J0534+2200

Flux ($10^{-8}$ cm$^{-2}$ s$^{-1}$)

Jul. 18, 2007

Mar. 09, 2009

E > 400 MeV
LSI +61 303

0FGL J0240.3+6113
1AGL J0242+6111
3EG J0241+6103

Flux (10^{-8} \text{ cm}^{-2} \text{s}^{-1})

Jul. 18, 2007

Mar. 09, 2009

E > 100 \text{ MeV}
HESS J1813-178

Flux ($10^{-8}$ cm$^{-2}$ s$^{-1}$)

Jul. 18, 2007

0FGL J1814.3-1739

Mar. 09, 2009

E $>$ 400 MeV

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Note: the used time sampling (based on OBs) is not sensitive to June 08 flare (few days long, shown in red)

Conclusions

75 known TeV sources have been monitored analysing the AGILE data

For most of them the *light curves* have been produced

The results could be useful for a multi-wavelength analysis

Next

Extend the TeV source list (new entries in TeVCat)
A more detailed spectral analysis and the refined position location will be done
Thanks to Fulvio Mauri (1953-2008)