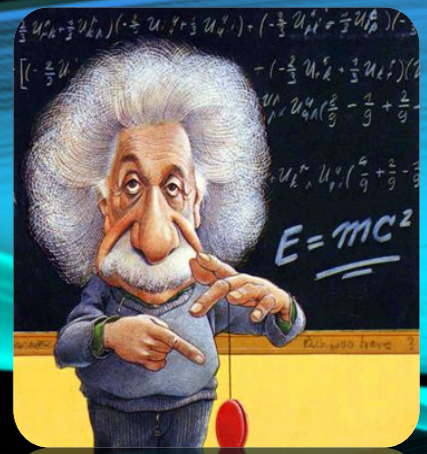


# How to become "*Scientists*" in half a year

Elena Sirghe, Davide Zambon (Liceo Ettore Majorana Torino) -  
on behalf of: Anna Roppo, Claudia Nocera, Alberto Preti, Fabrizio Bisogno  
(Data Quality Monitoring group)



# TRAINEESHIP PROGRAM: Working experience during High School

- Students attending the last 3 years of high school in Italy;
- Internships/stages at private or public corporations, institutes, Universities, etc.;
- The «working» experience will be presented during the final exam.





# DEPARTMENT OF PHYSICS, UNIVERSITY OF TURIN





# ON SHIFT

## The most difficult tasks:

- Dealing with a mailing list
- Interpreting the plots
- Understanding the meaning of the variables

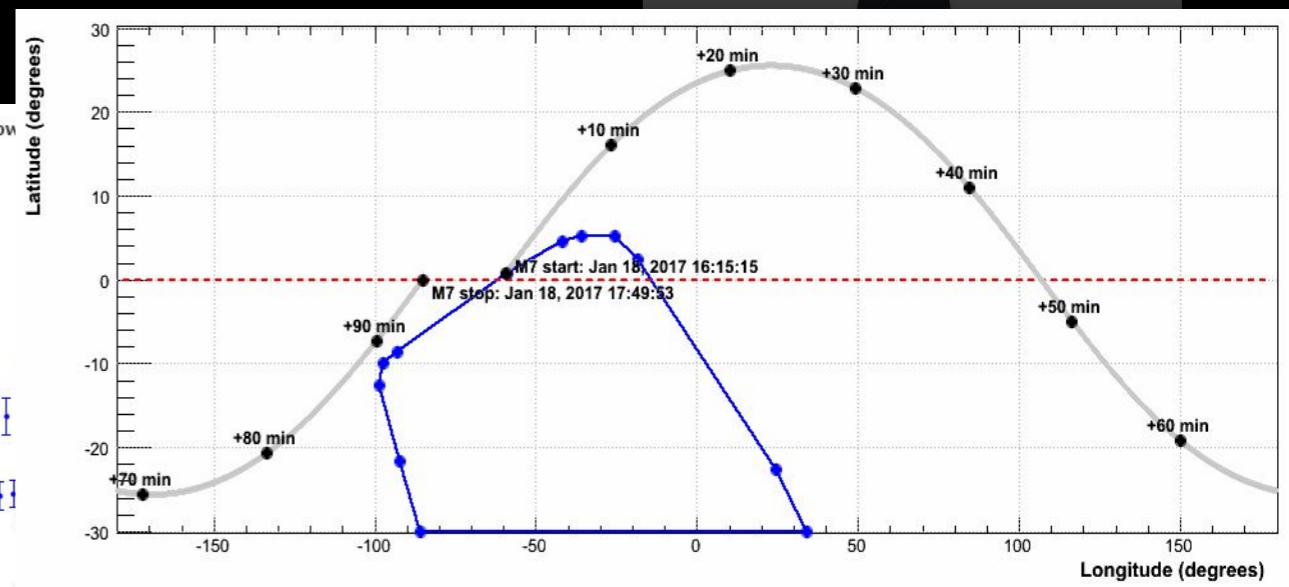
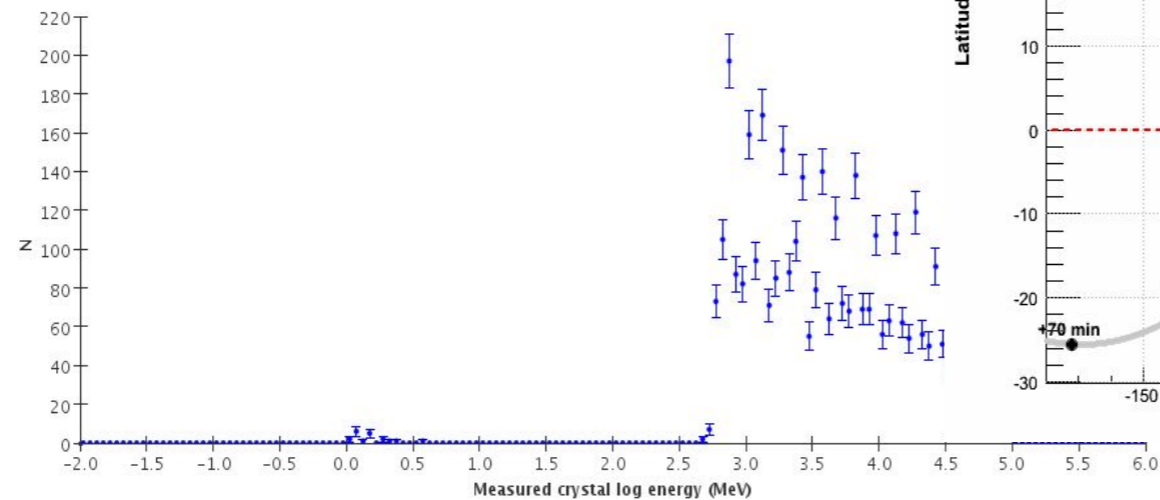


### LAT Instrument Data Monitoring by thread

16703 messages: Starting Thu 13 Mar 08 - 15:08:31 PDT. Ending Mon 27 Mar 17 - 02:29:22 PDT  
sort by: [ thread ] [ author ] [ date ] [ subject ] [ attachment ]  
Mail actions: [ mail a new topic ]  
Nearby: [ Other mail archives ]

- [DATAMON] Starting my shift Johan Bregeon (Mon 27 Mar 17 - 02:27:03 PDT)
- [DATAMON] Warning on Lac\_Thresholds\_FaceNeg\_TH1\_TowerCalLayerCalColumn\_13\_1\_1 for run 512195646 Luca Baldini (Sun 26 Mar 17 - 11:36:28 PDT)
- [DATAMON] Warning on RPM\_RMS\_TH1\_CAL\_channel 808 for run 512177889 Luca Baldini (Sun 26 Mar 17 - 11:26:27 PDT)
- [DATAMON] Warning on CondSummaryWord\_TH1\_f
- [DATAMON] Red question mark in the halfpipe for de
  - Re: [DATAMON] Red question mark in the half
- [DATAMON] Two warning on normalized event rates
- [DATAMON] Two (unrelated) alarms for run 5118293
- [DATAMON] Warning on CondArrCNO\_Call\_oOpens
- [DATAMON] Red cross in the data processing page L1
  - [DATAMON] Re: [OPSPROB] Red cross in the
- [DATAMON] Warnings on CAL\_channel at Tower 15
- [DATAMON] Red crosses in the data processing page
  - [DATAMON] Re: [OPSPROB] Red crosses in th
- [DATAMON] Warning on CalXAdcPedRMSDiffer
  - Re: [DATAMON] Warning on CalXAdcPedPedf
  - Re: [DATAMON] Warning on CalXAdcP
  - Re: [DATAMON] Warning on CalX
- [DATAMON] Starting my DOM shift Luca Baldini (M
- [DATAMON] Warning in run 511641895 for variable f
  - [DATAMON] Warning in run 511641895\_51157
  - [DATAMON] Re: Warning in run 511590
- [DATAMON] Alarms for run 511550590 Mattia Di M

Low energy tail of the distribution of measured energy (MeV) in the crystal log for NEG face (from CalTuple). (tow





# ON SHIFT

...And what we enjoyed the most:

- Taking part in an international scientific community
- Learning the meaning of the variables and plots
- Getting to know more about Fermi and about the Universe
- Having a taste of a researcher's life

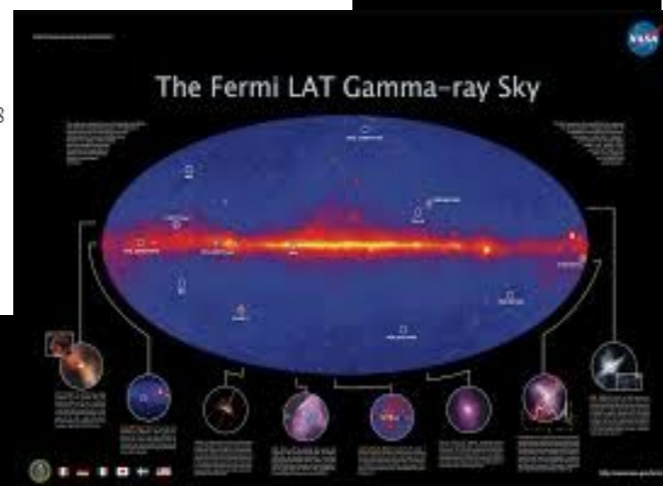
## [DATAMON] Runs review from 16 to 18 January 2017

This message: [ [Message body](#) ] [ [Respond](#) ] [ [More options](#) ]  
 Related messages: [ [Next message](#) ] [ [Previous message](#) ]

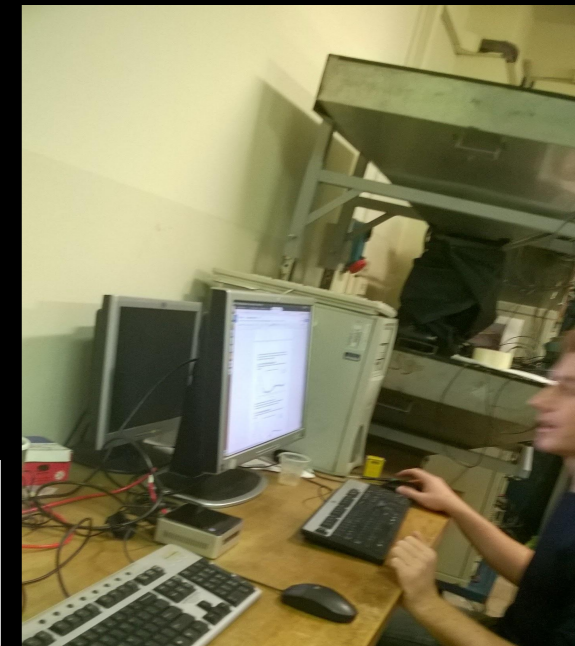
From: Simone Maldera <[maldera\\_at\\_to.infn.it](mailto:maldera_at_to.infn.it)>  
 Date: Wed, 18 Jan 2017 18:11:35 +0100

Dear all,  
 we are the two high school students who are enjoying being on shift this week, as Luca Latronico advised you (<https://www-glast.stanford.edu/protected/mail/datamon/16507.html> <<https://www-glast.stanford.edu/protected/mail/datamon/16507.html>> ). So far, we reviewed runs from 506186497 to 506431530 (between 16 and 18 January 2017) and we marked all of them as good as we found no alarms. In run 506315766 there were two warnings as we already informed you (<https://www-glast.stanford.edu/protected/mail/datamon/16511.html> <<https://www-glast.stanford.edu/protected/mail/datamon/16511.html>> ).

Best regards,  
 Elena and Davide



Fermi LAT Collaboration Page		
WHAT'S NEW!	DOCUMENTS	COMMUNITY
<b>Press releases</b> NEW! Mar 17, 2017 Symmetry Magazine - Q&A: Dark matter next door? NEW! Feb 21, 2017 NASA's Fermi Finds Possible Dark Matter Ties in Andromeda galaxy	Basic information for new collaboration members. The LAT User Workbook Publication policy letter Other collaboration policy and planning documents NEW! Fermi-LAT Code of Conduct	Fermi LAT Institutions Fermi LAT Collaboration Roster of LAT People LAT Newsletter E-mail Lists and Archives Confluence ICQ/Trillian/GAIM Buddy list NEW! Fermi-LAT Slack
<b>CALENDAR</b>		
<b>New catalogs</b> NEW! February 2017 The Third Catalog of Hard Fermi-LAT Sources (3FHL) The Fermi Galactic Extended Source Catalog (FGES)	Upcoming Scientific Conferences or Schools Weekly analysis meetings (WAM) ISOC > LAT Monthly Status	<b>SCIENCE GROUPS</b> LAT Science Groups LAT Speaker's Bureau LAT Publication Board syst. SSAC Internal Site
<b>SOFTWARE</b>		
		Science Analysis Software CVS Code Archive







**THANK YOU AND HOPEFULLY SEE  
YOU SOON!**

We would like to thank, in particular, **Raffaella Bonino, Simone Maldera** and **Luca Latronico** - for supporting us and teaching us a lot!

Elena Sirghe, Davide Zambon, Anna Roppo, Claudia Nocera, Alberto Preti, Fabrizio Bisogno





flickr

Tu

Esplora

Crea

Q Foto, persone o grup



## FERMI-LAT-SCIENTIFIC PLOTS

1 follower • 1 following

**Edoardo Abate, Davide Camino,  
Sara Guidetti, Marta Ibba**









# FERMI-LAT-SCIENTIFIC PLOTS

1 follower • 1 following

FermiPapers-Dump161215 ☆

File Edit View Insert Format Data Tools Add-ons Help Last edit was 12 days ago

Comments Share

	A	F	G	H
1	<b>title</b>			
2	Simultaneous Observations of PKS 2155-304 with RXTE, and Atom: Spectral Energy Distributions at a Low State	/696/2/L150	fatta 2 plot	16/01/17 Abate Camino
3	Fermi/LAT discovery of gamma-ray emission from flat-spectrum radio quasar PKS 1454-354	/697/1/934	fatta 5 plot	16/01/17 Abate Camino
4	Fermi Discovery of gamma-ray emission from NGC 1264	/699/1/31	fatta 7 plot	18/01/17 Abate Camino
5	Early Fermi Gamma-ray Space Telescope Observations of the Quasar 3C 454.3	/699/1/817	fatta 3 plot	18/01/17 Abate Camino
6	Fermi/Large Area Telescope Discovery of Gamma-ray Emission from a Relativistic Jet in the Narrow-Line Quasar PMN J0948+0022	/699/2/976	fatta 5 plot	18/01/17 Abate Camino
7	Bright AGN Source List from the First Three Months of the Fermi Large Area Telescope All-Sky Survey	/700/1/597	fatta 23 plot	18/01/17 Abate Camino
8	Fermi Large Area Telescope Gamma-Ray Detection of a Blazar in the Galaxy M87	/707/1/55	fatta 4 plot	18/01/17 Abate Camino
9	Multiwavelength monitoring of the enigmatic Narrow-Line Seyfert 1 Galaxy PMN J0948+0022 in March-July 2009	/707/1/727	fatta 12 plot	20/01/17 Abate Camino
10	Fermi observations of TeV-selected AGN	/707/2/1310	fatta 14 plot	20/01/2017 Abate Camino
11	Radio-Loud Narrow-Line Seyfert 1 as a new class of gamma-ray AGN	2009ApJ...707L.142A	fatta 1 plot	20/01/2017 Abate Camino
	Fermi Observations of the Very Hard Gamma-ray Blazar PG 1553-163			

<b>AGN</b>	<b>12</b>
<b>Catalogs</b>	<b>5</b>
<b>Dark Matter</b>	<b>10</b>
<b>Galactic</b>	<b>19</b>
<b>TOT</b>	<b>46</b>



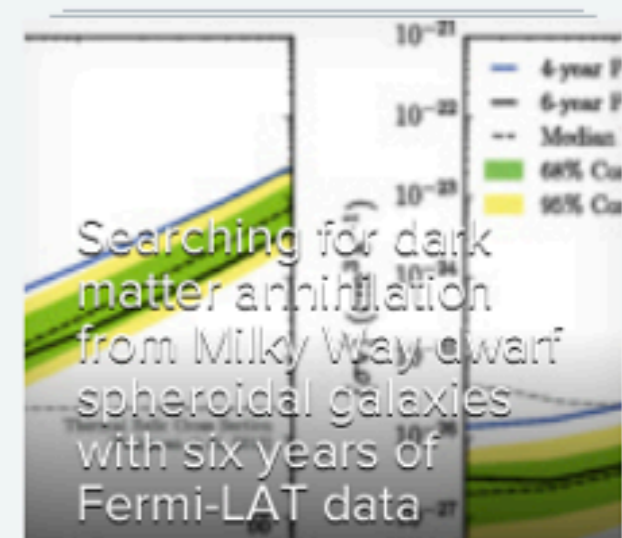
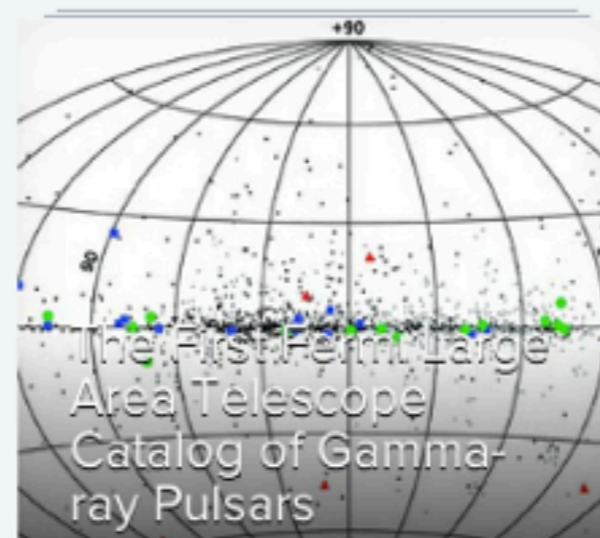
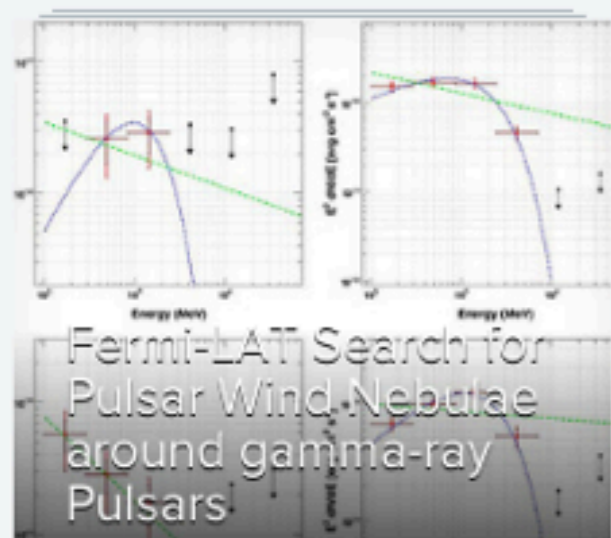
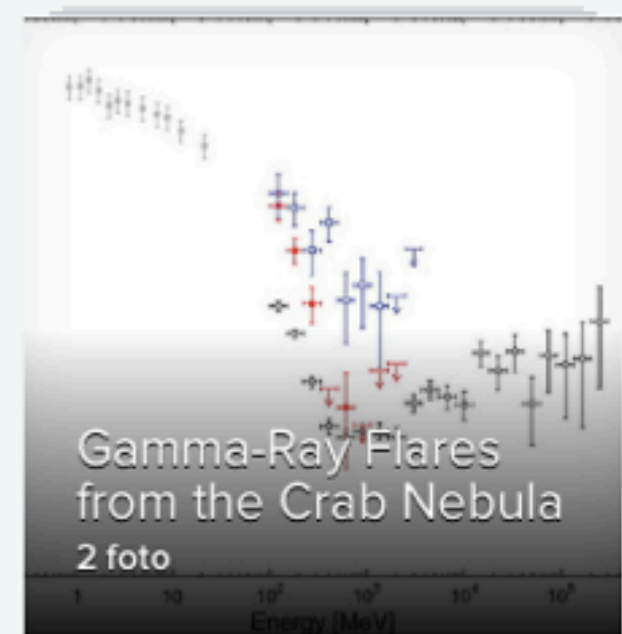
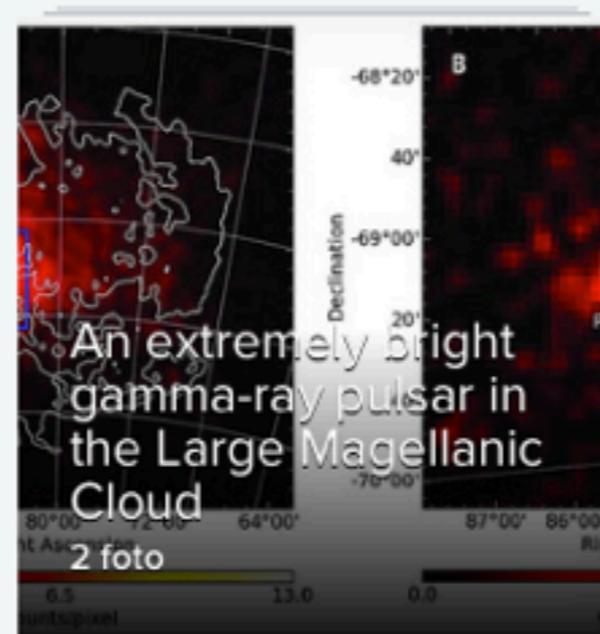


# FERMI-LAT-SCIENTIFIC PLOTS

1 follower • 1 following

Rullino Fotostream Album Preferiti Gruppi Creazioni Statistiche Altro

Nuovo album Nuova raccolta Visualizza le mie raccolte







# FERMI-LAT-SCIENTIFIC PLOTS

gennaio 2017  
Utente da

Photostream Album Preferiti

Vai a: 1 2 3 4 A B C D E F G H I J L M N O P Q R S T V W X Y Y

Tag

Hai 17 elementi senza tag.

1

[1502036](#)

[1553113](#)

[16pulsars](#)

[1es0347-121](#)

[1es2344514](#)

2

[2005489](#)

[2008](#)

[2009](#)

[2010](#)



# FERMI-LAT-SCIENTIFIC PLOTS

gennaio 2017  
Utente da

Photostream

Album

Preferiti

Vai a: 1 2 3 4 A B C D E F G H I J L M N O P Q R S T V W X Y Y

Tag

Hai 17 elementi senza tag.

1

1502036

1553113

16pulsars

1es0347-121

1es2344514

2

2005489

2008

2009

2010

flickr

Tu Esplora Crea

C

cassiopeia

catalog

centaurusb

cluster

clusters

coldwarmcolors

collaboration

coma

cool

countmap

crabnebula

crabpulsar

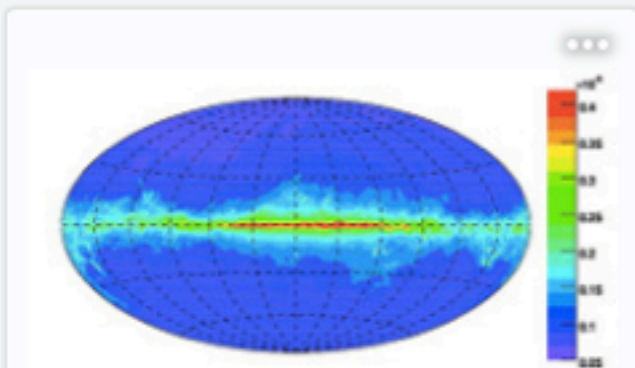




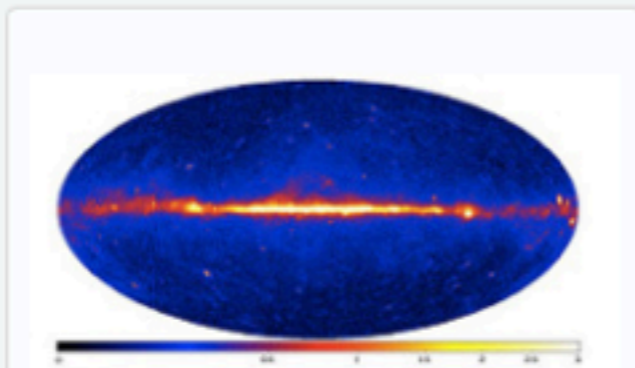
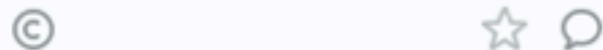


Le tue foto

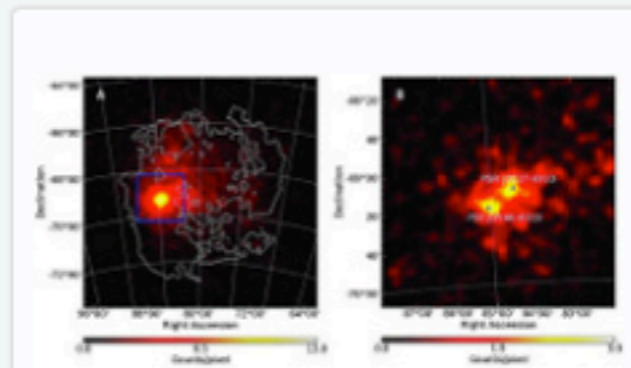
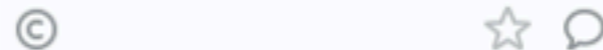
Visualizza tutte e 26



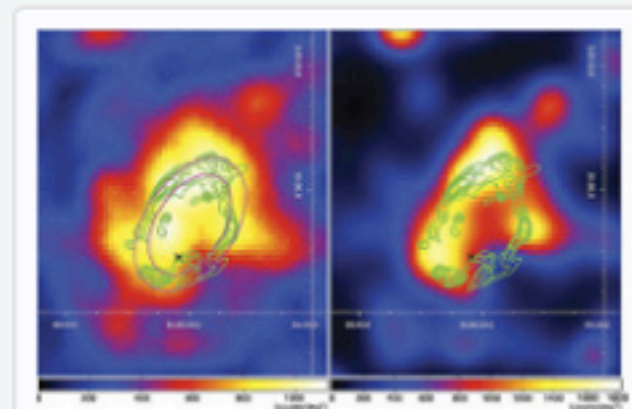
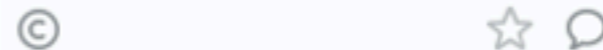
4 scattata da TE!



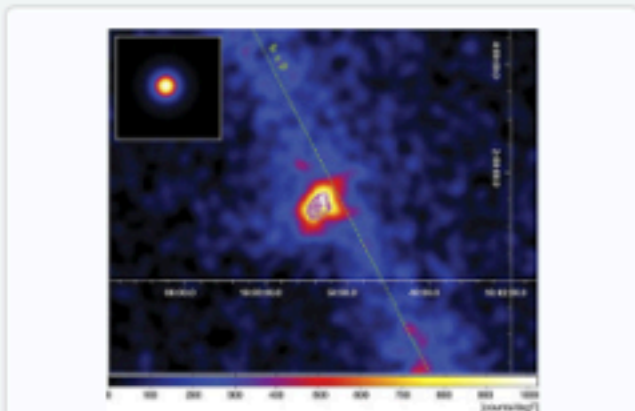
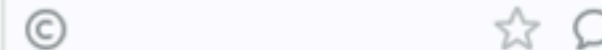
1 scattata da TE!



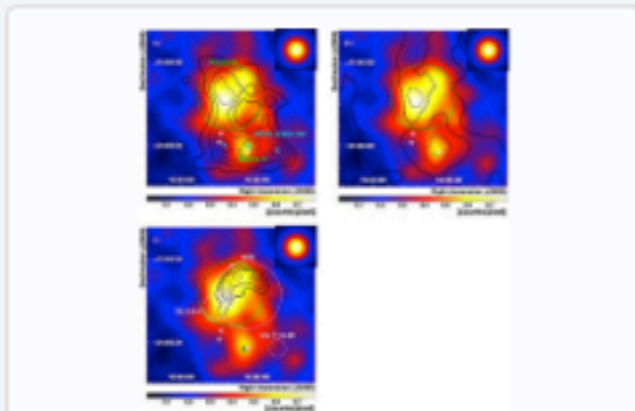
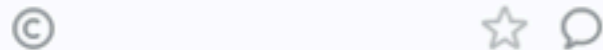
e1 scattata da TE!



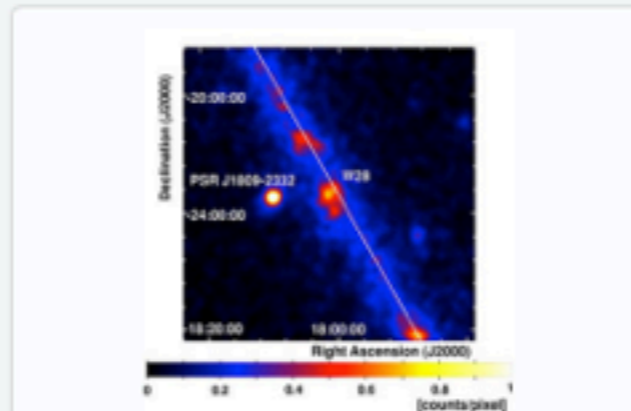
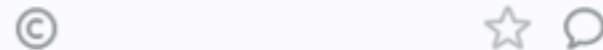
b2 scattata da TE!



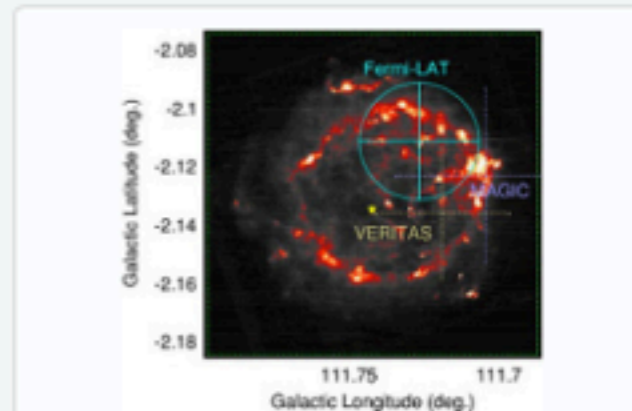
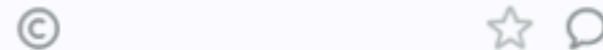
B1 scattata da TE!



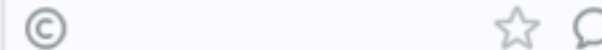
g2 scattata da TE!



g1 scattata da TE!



c2 scattata da TE!









# Tags: plot type

map  
Spectra  
exclusion plot  
phasogram  
Light  
curve

- Map:
  - counts\_map
  - TS\_map
  - residuals\_map
- Light\_curve
- Spectra
- Instrument
- Phasogram
- Exclusion\_plot



# Tags: sources

- Transient
- Catalog
- Multi-wavelength
- diffuse\_emission
- Sorgente:
  - AGN (Active Galactic Nuclei)
  - Blazar
  - Pulsar
  - Grb (Gamma ray burst)
  - Solar
  - SNR (Supernova remnant)
  - dark\_matter
  - cosmic\_rays

AGN

BLAZAR

DARK MATTER

# Tags: sources

- Transient
- Catalog
- Multi-wavelength
- diffuse\_emission
- Sorgente:
  - AGN (Active Galactic Nuclei)
  - Blazar
  - Pulsar
  - Grb (Gamma ray burst)
  - Solar
  - SNR (Supernova remnant)
  - dark\_matter
  - cosmic\_rays

AGN

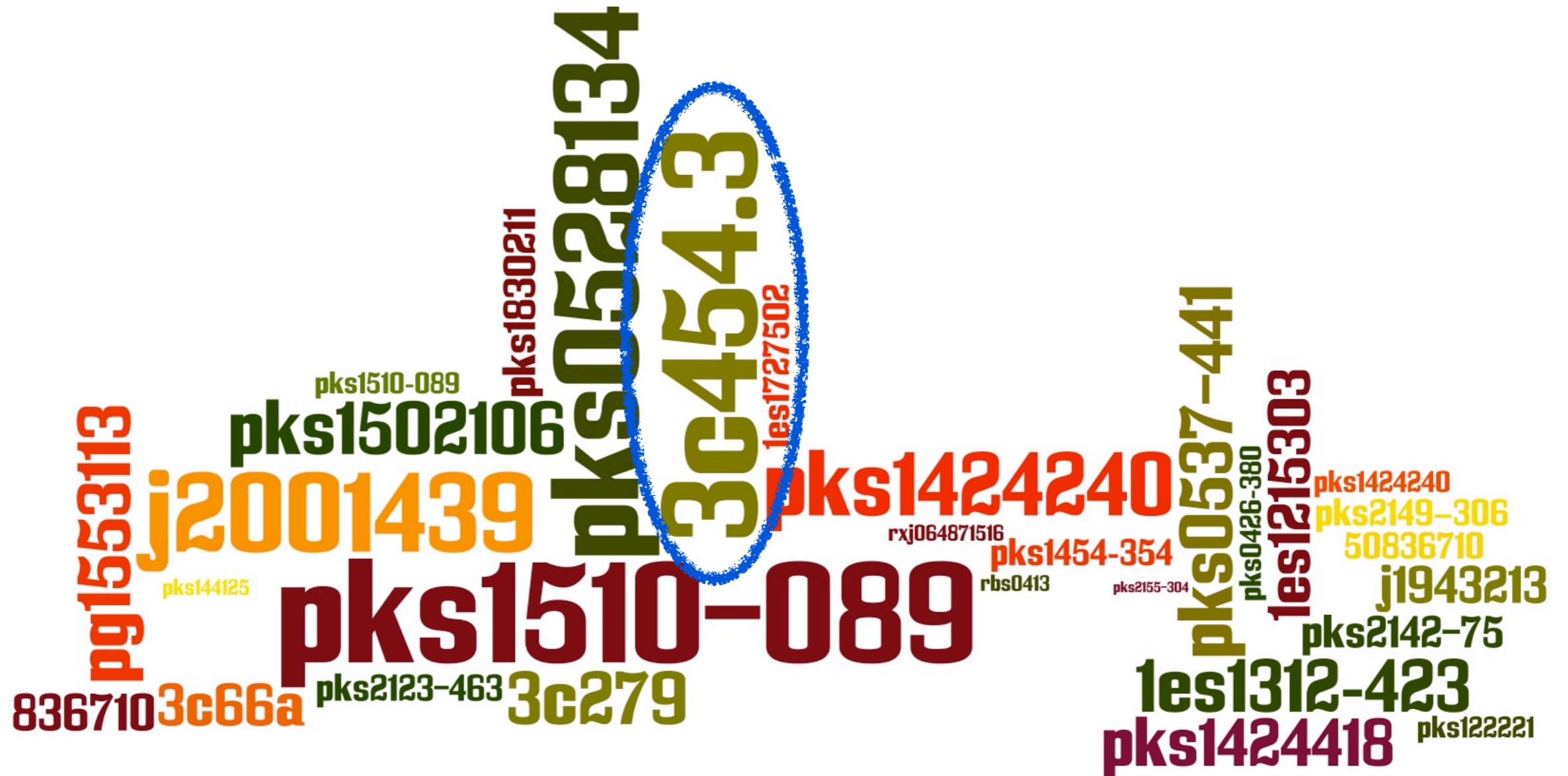
GRB

BLAZAR



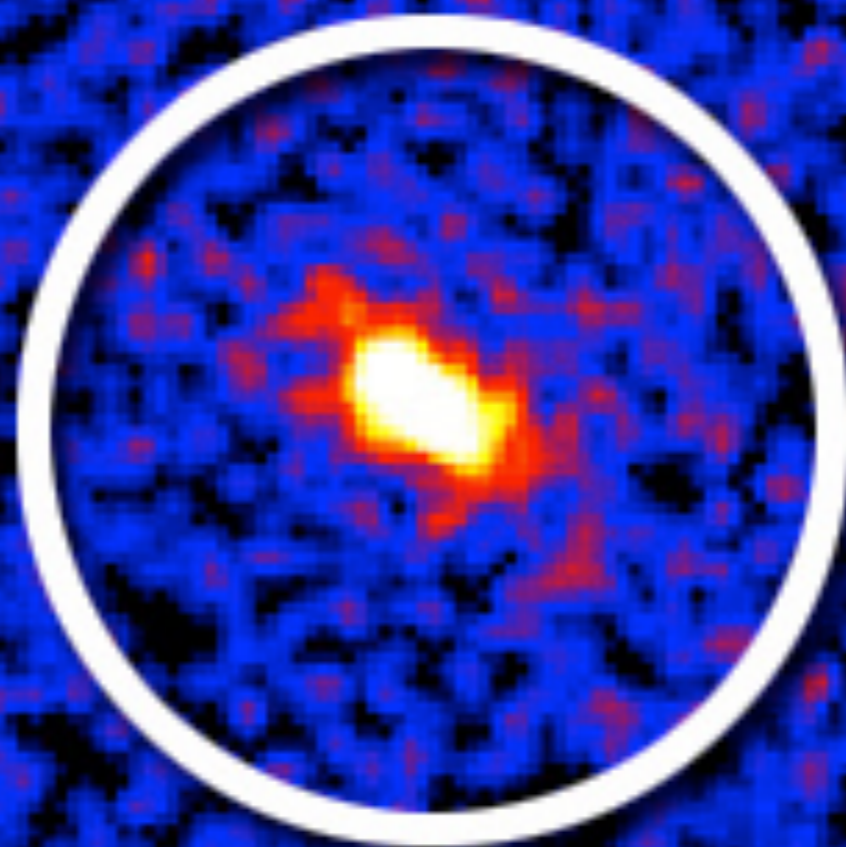


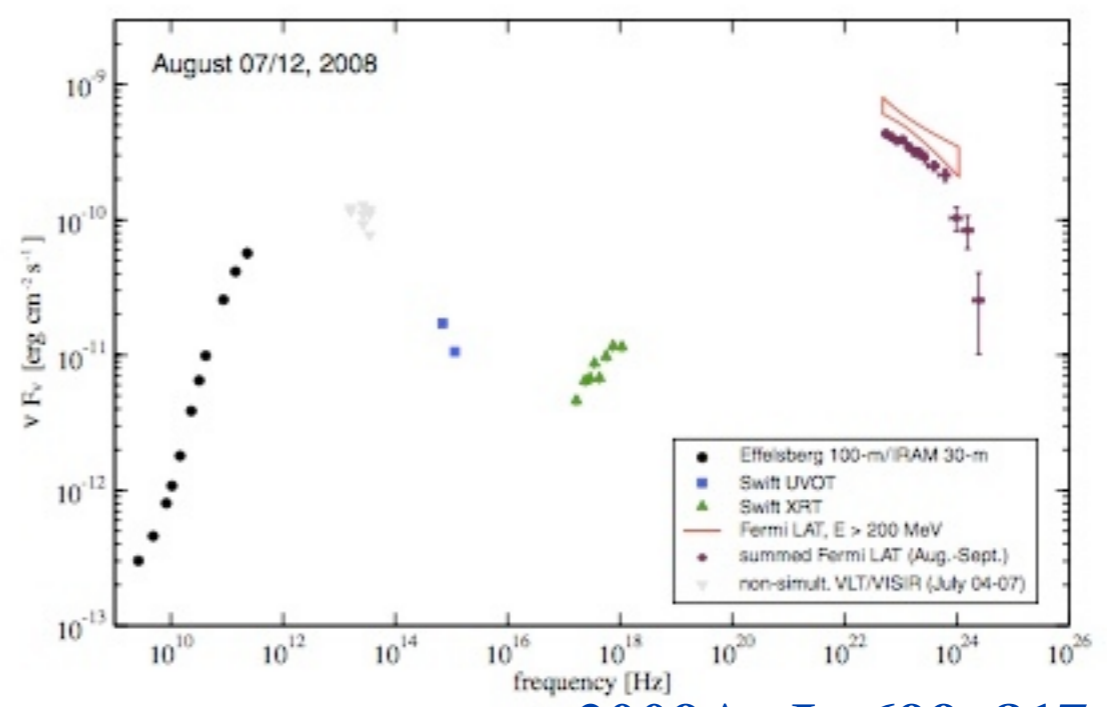
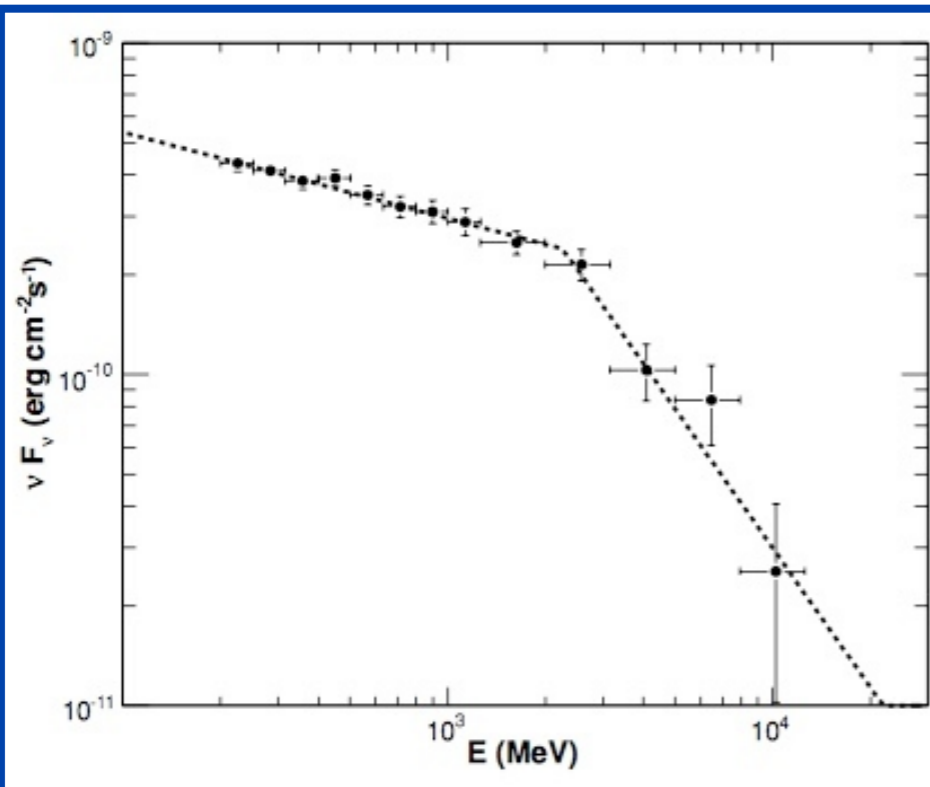
# Blazars statistics



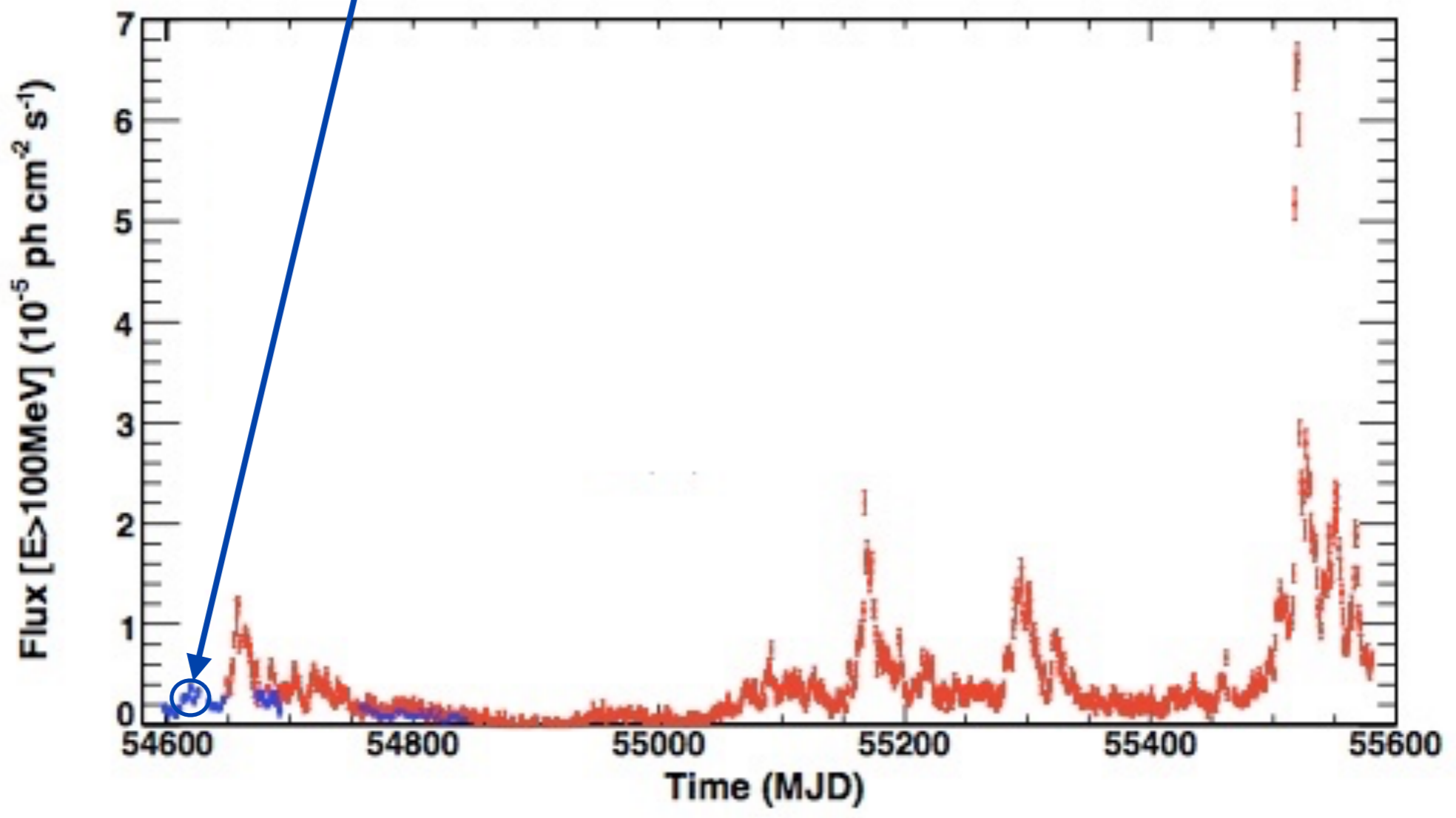


**3C 454.3**

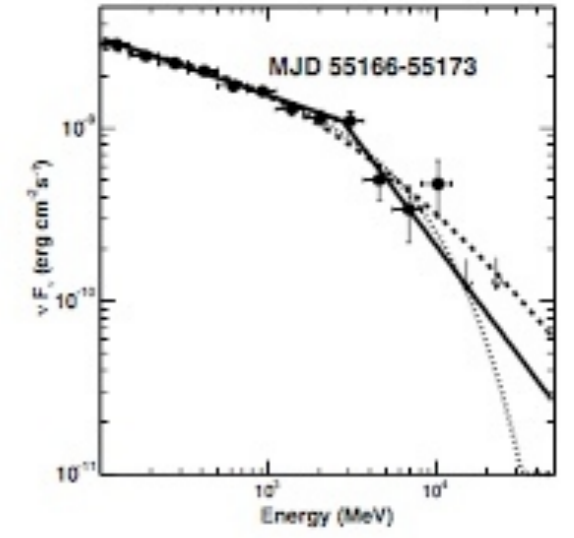
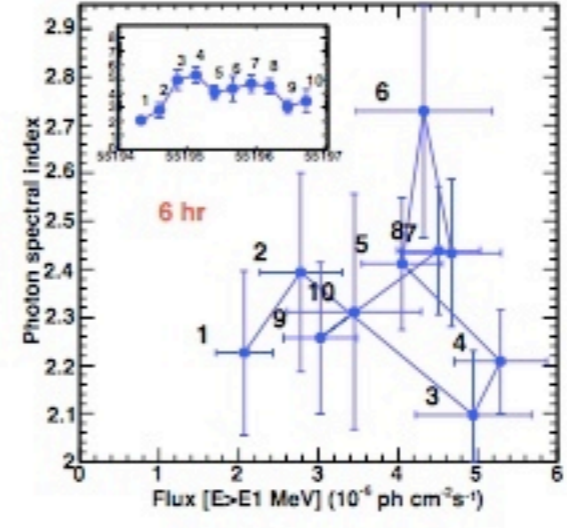
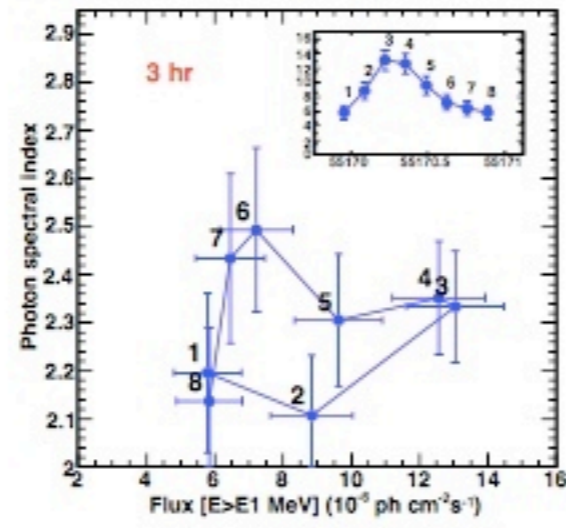
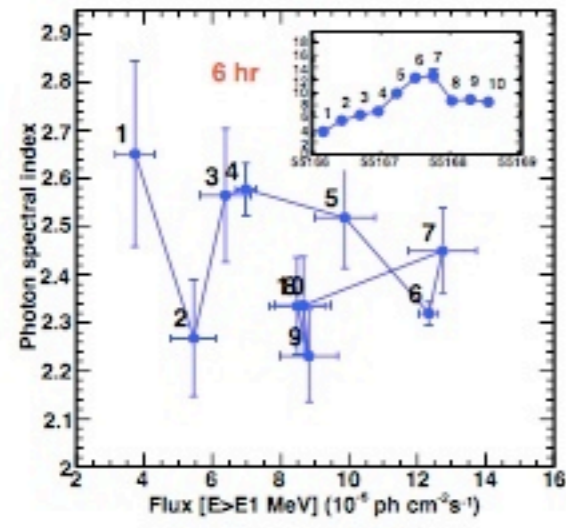




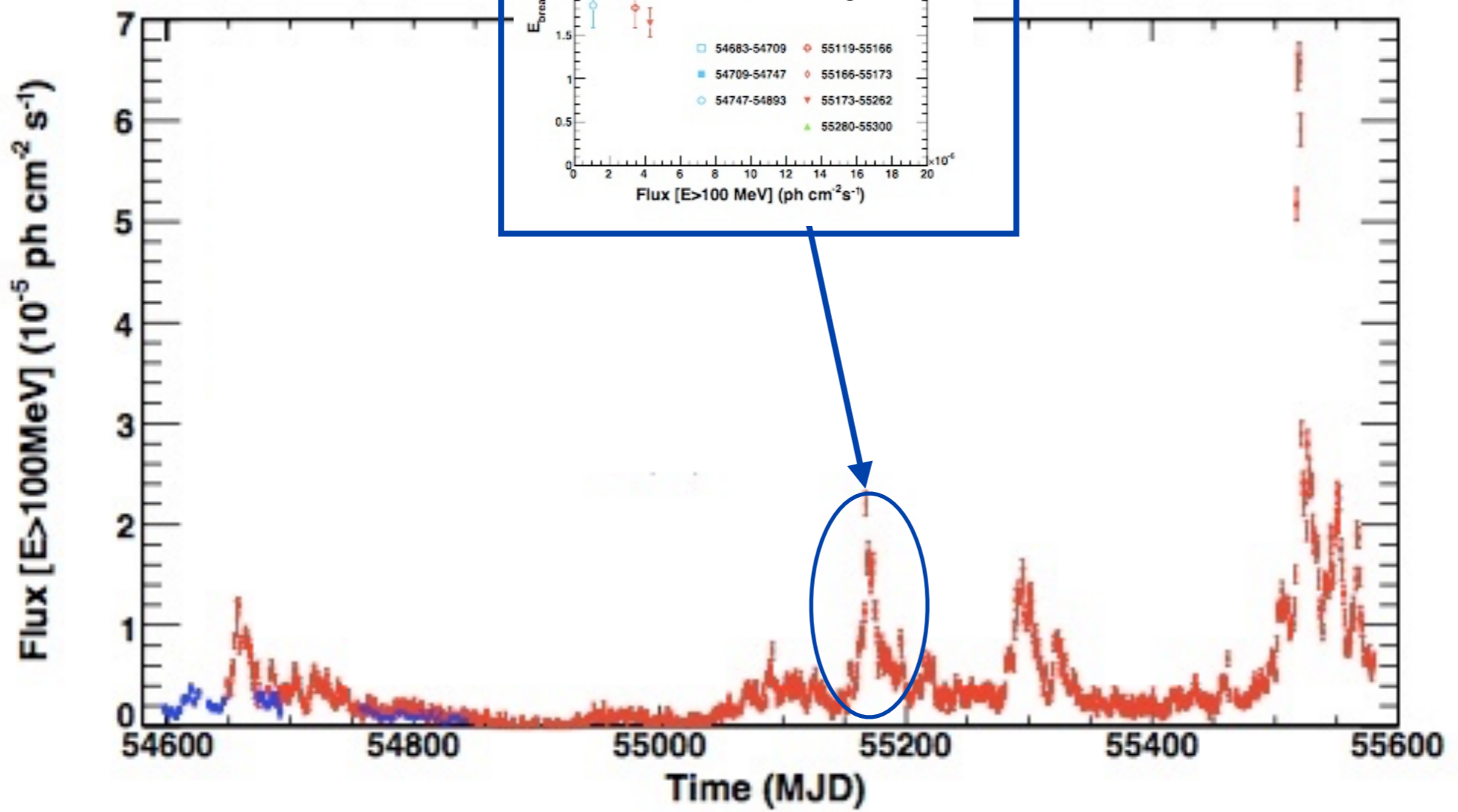
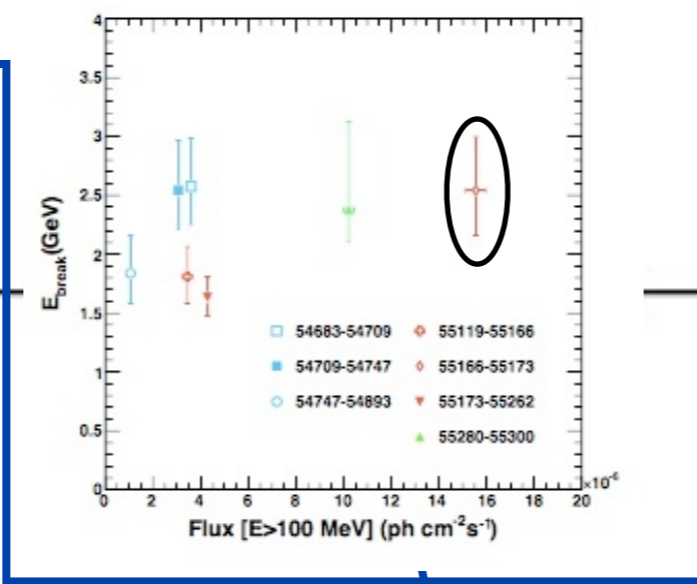
2009ApJ...699..817A

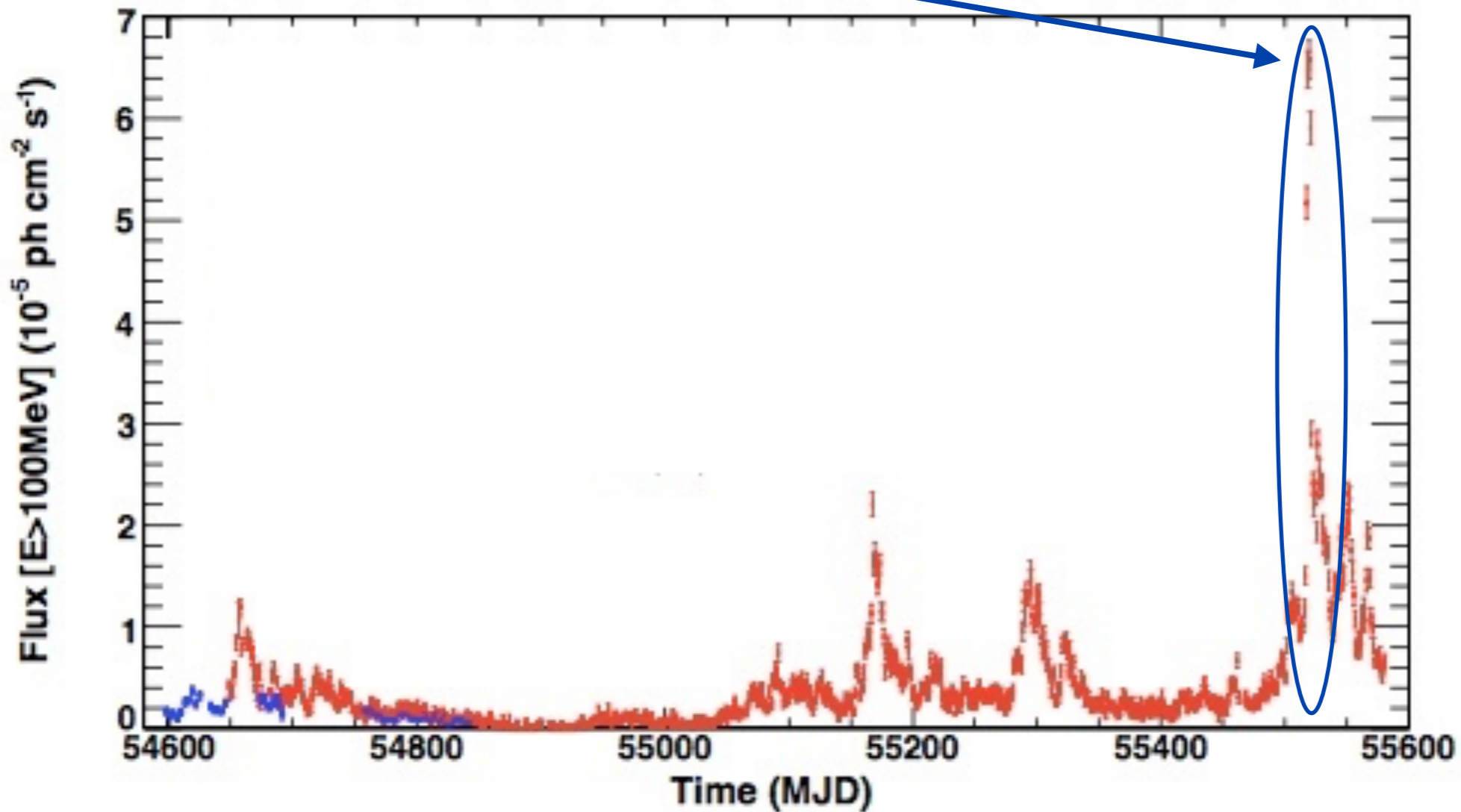
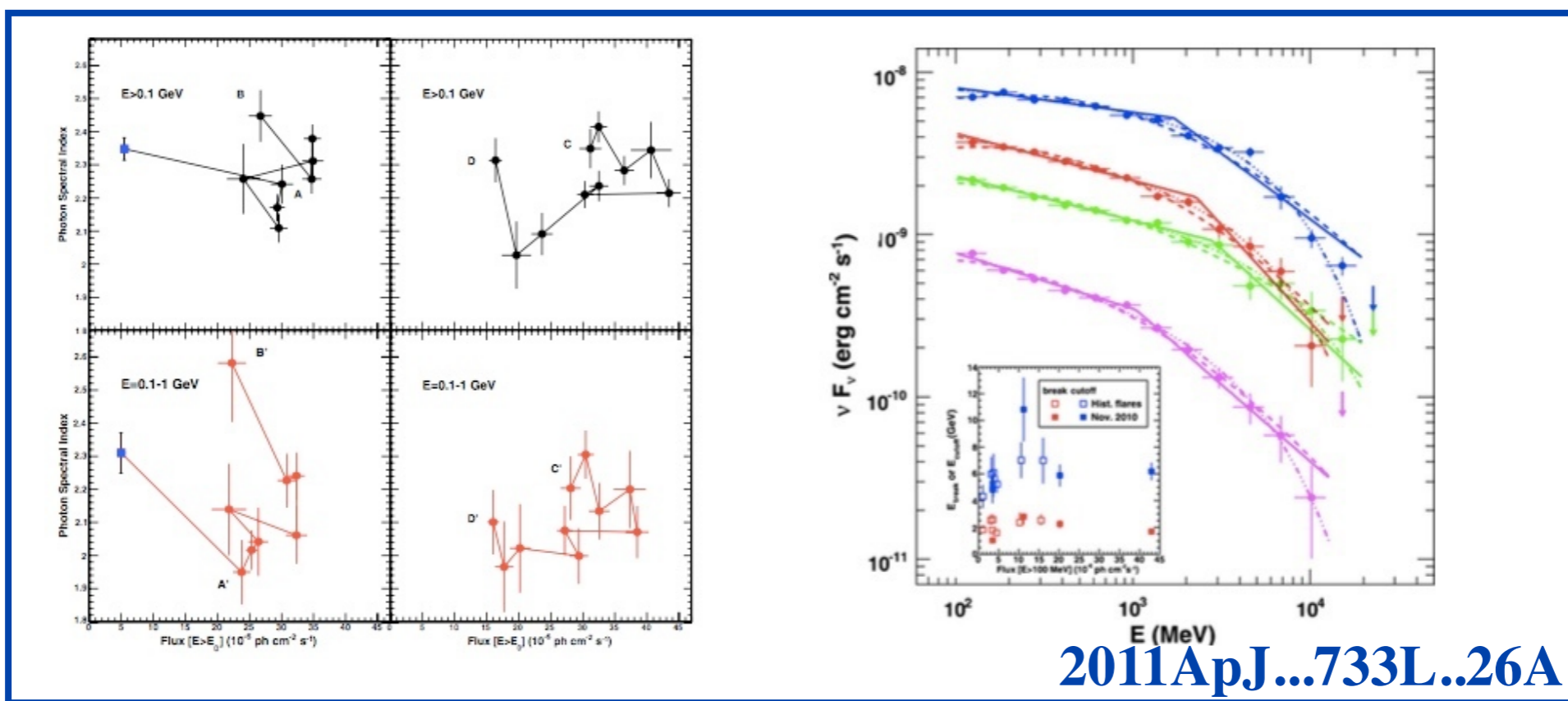




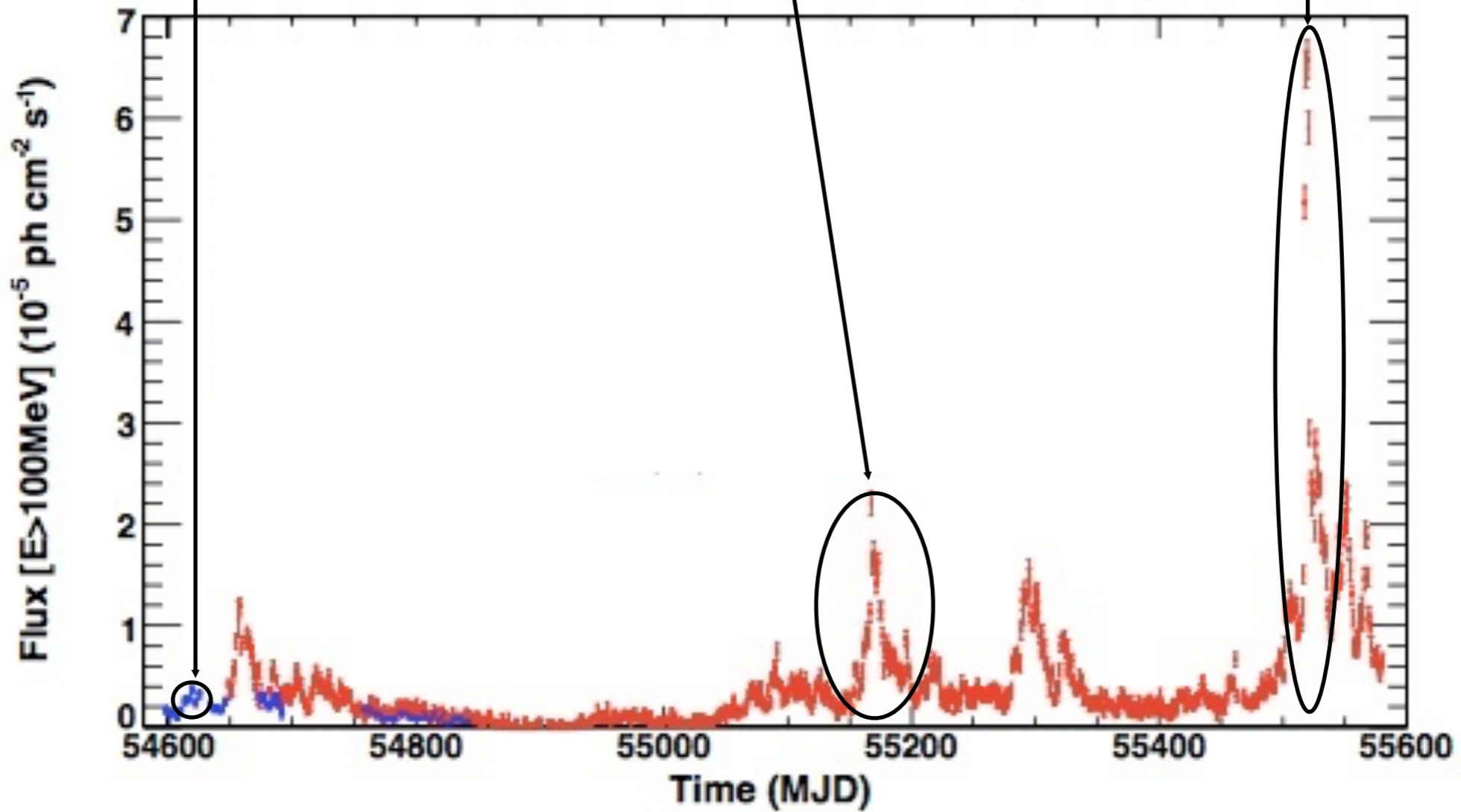
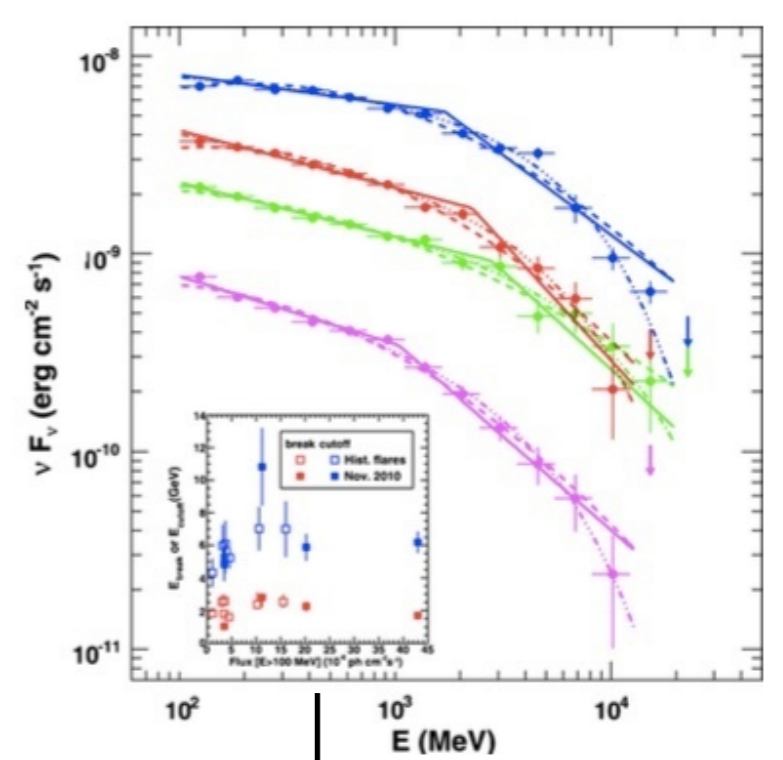
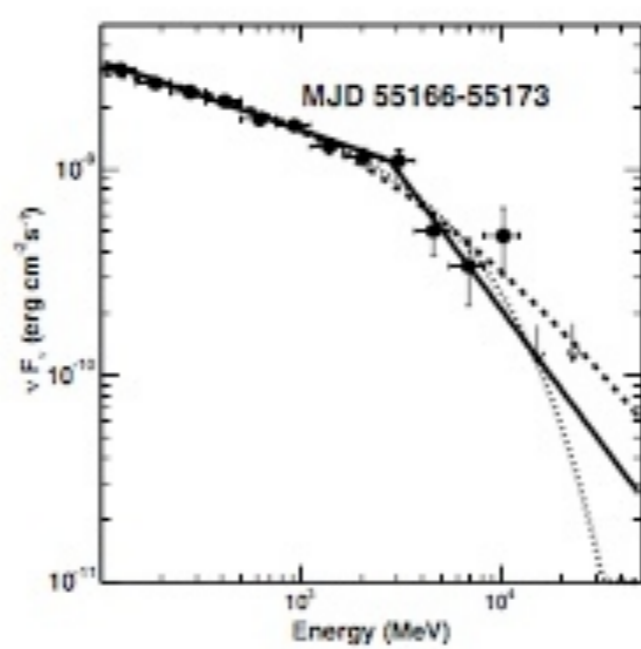
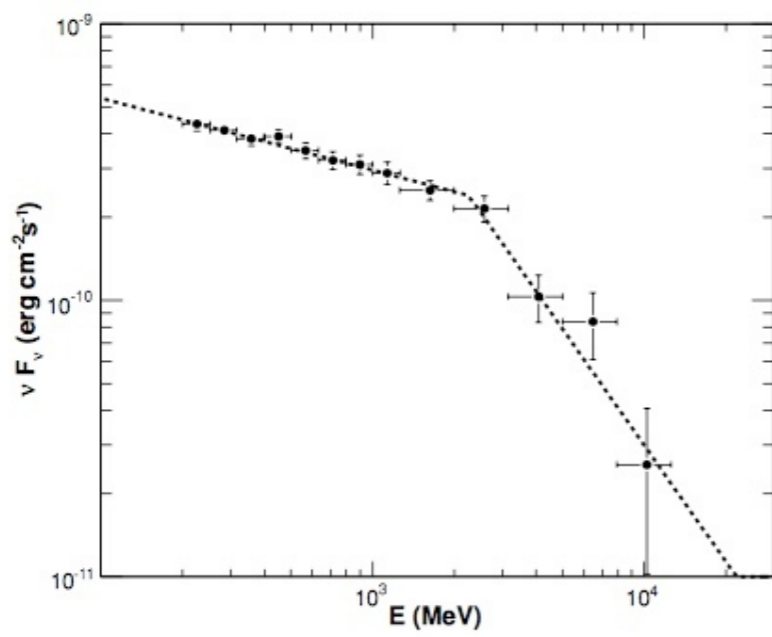


2010ApJ...721.1383A










# In the future...

- This was just an example of a simple exercise that can be done with the **flickr** gallery we've created
- Efficient technique to learn directly from images (w/o a scientific bkg)
- We intend to extend the collection and improve the potentialities of the gallery
- **Stay tuned.....** 



# FERMI MASTERCLASS 2017

5 aprile 2017

Bari – Nova Gorica – Perugia – Torino – Trieste

- It will take place on April 5<sup>th</sup>, in **5 cities** simultaneously
- **Huge number of requests** → we had to limit the registrations
- Usual structure of International Masterclasses:
  - **lessons and seminars** in the morning
  - analysis of **real data** (light curves and count maps) in the afternoon
  - **video conference** for discussion and combination of results at the end
- We've involved also **high school students** in the **preparation...**

