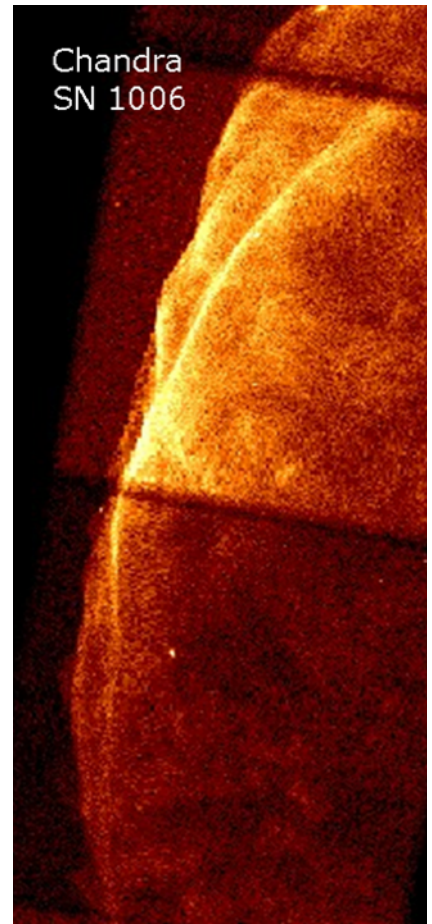
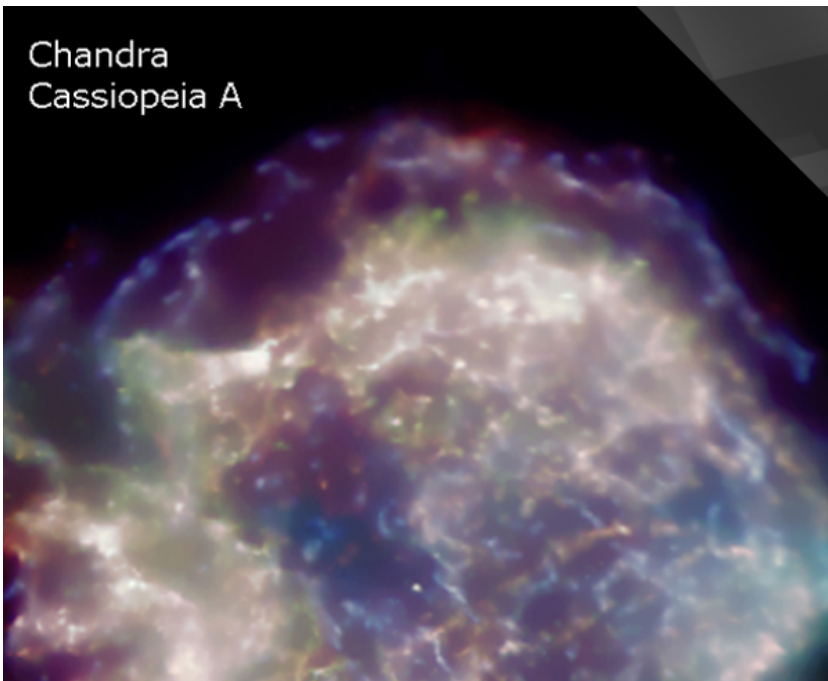
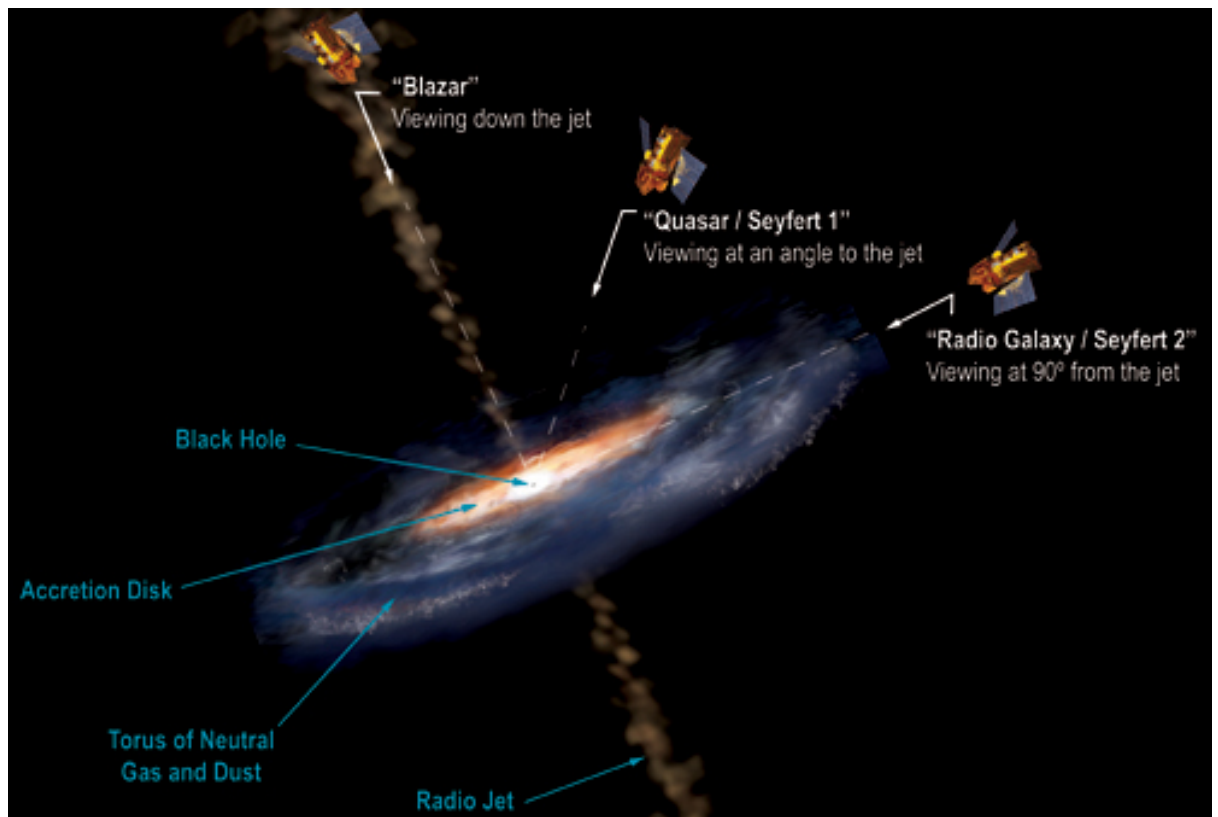
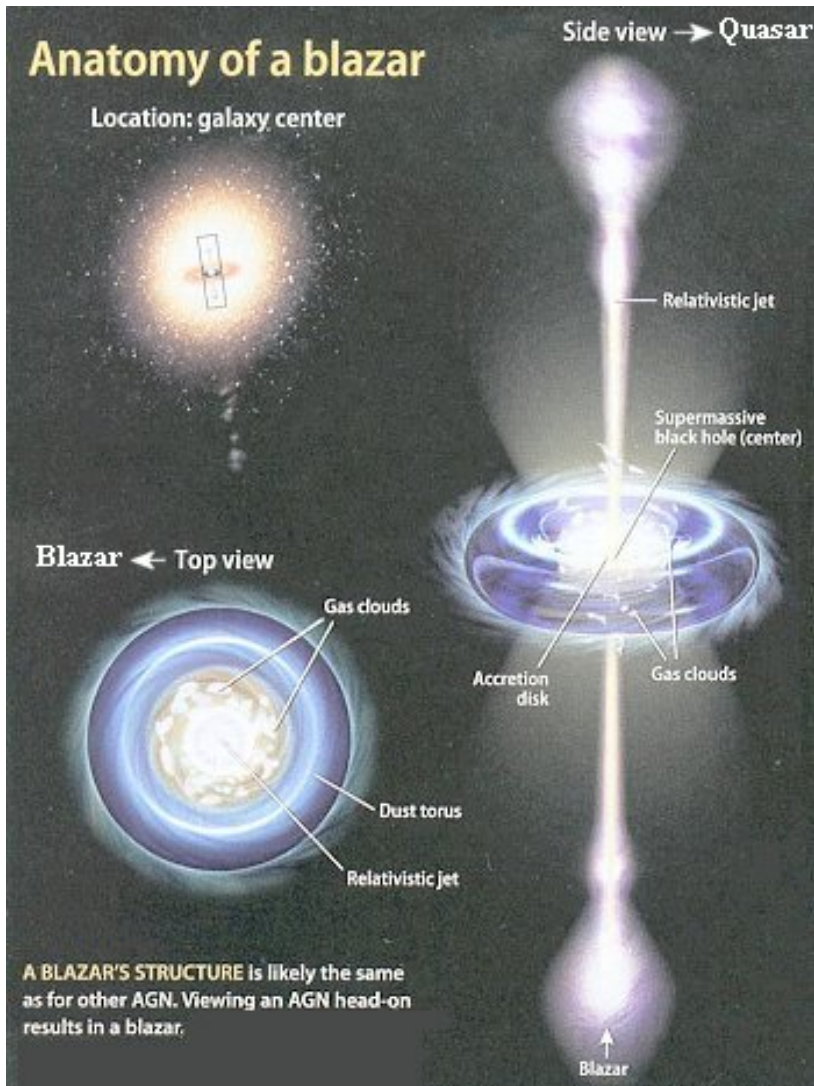
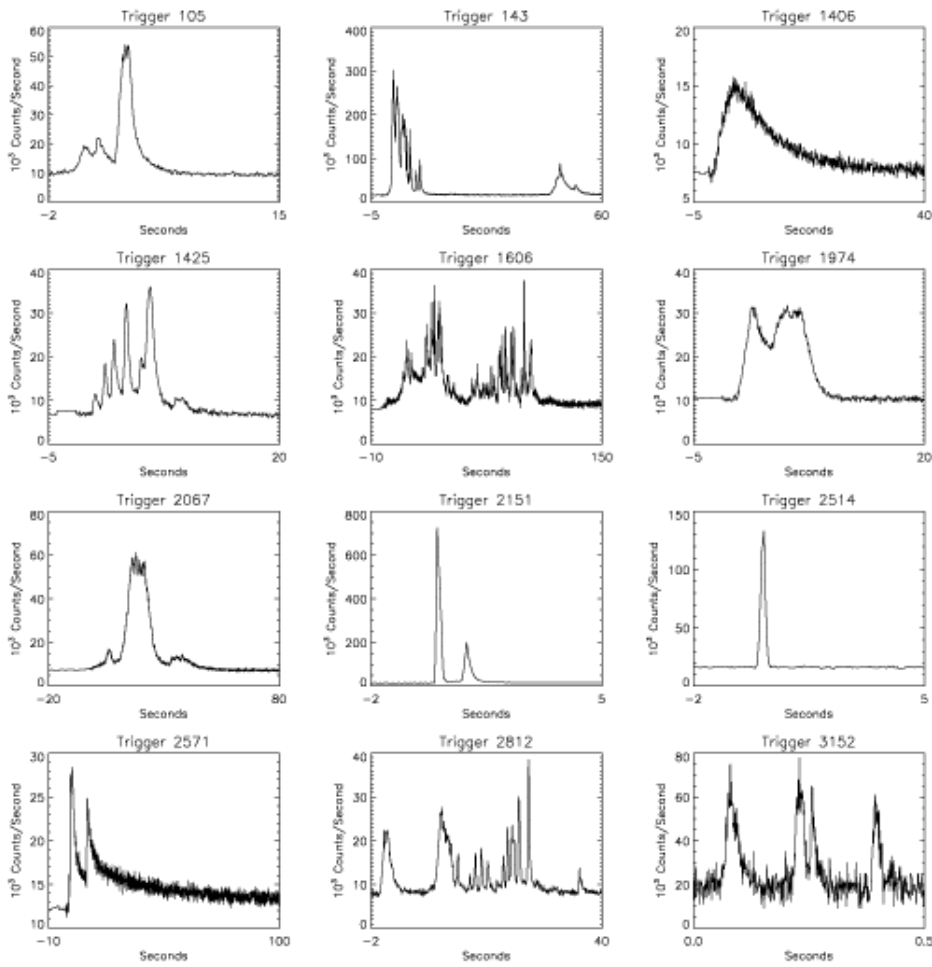


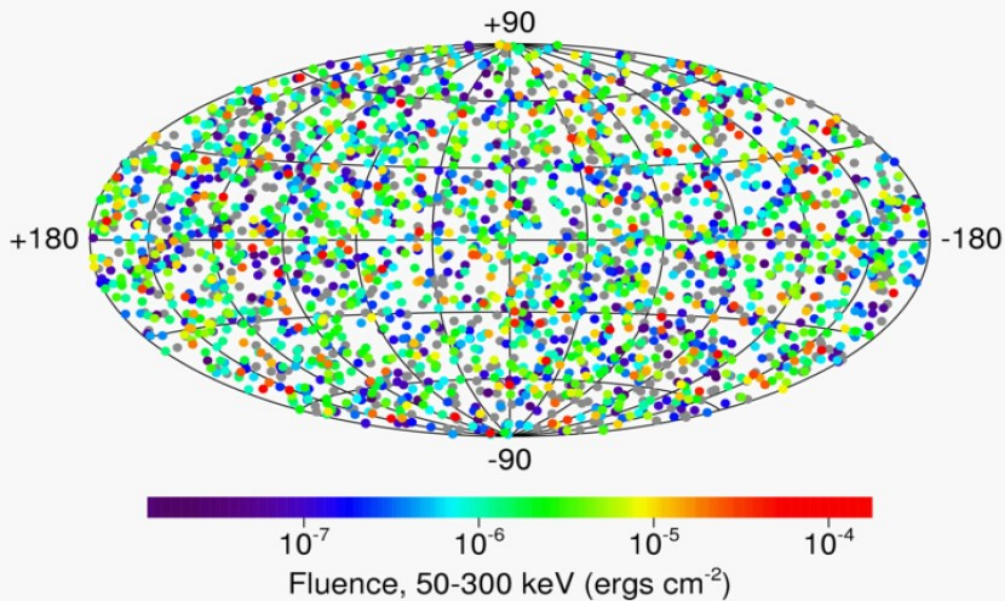
Fig. 10.1. Interaction length for γ -ray (solid) and electron (dashed line) interactions on the universal photon backgrounds. Only the major process of production of electron–positron pairs is plotted for gamma-rays. The electron interaction length is shown for inverse Compton effect.

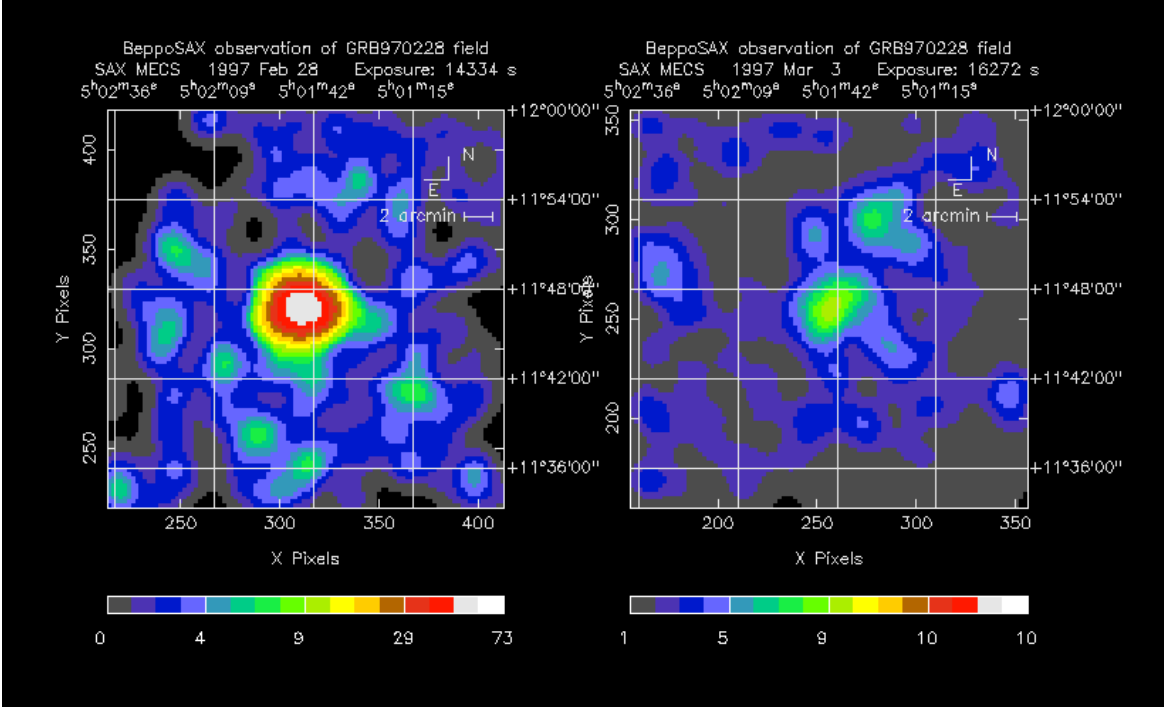






2704 BATSE Gamma-Ray Bursts





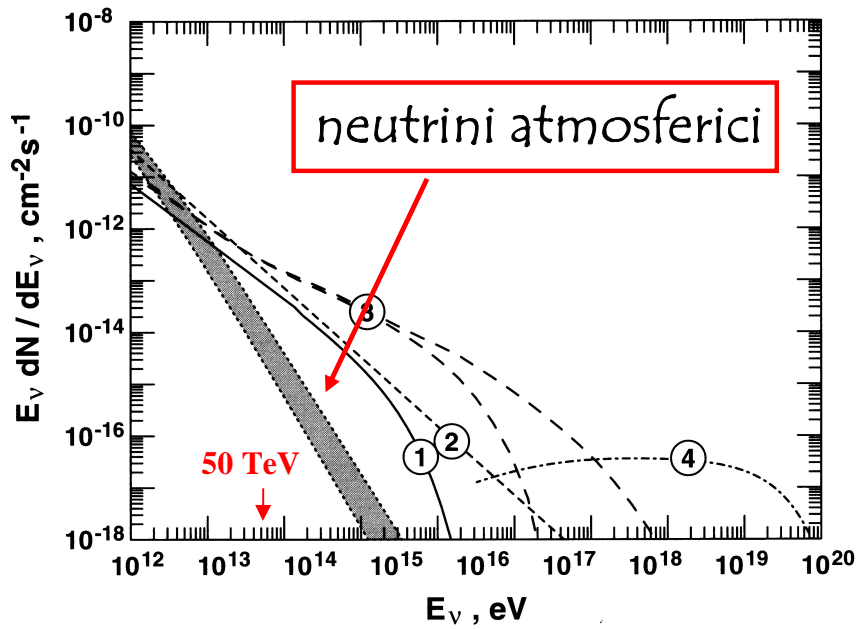


Fig. 10.12. Predictions of neutrino fluxes from different types of sources. (1) is the neutrino flux that would correspond to the gamma-rays of SNR IC443. (2) is the neutrino emission that would correspond to hadronic origin of the Mrk 501 gamma-ray outburst. (3) is the range of neutrino emission from the core of 3C273, and 4) is a prediction for the neutrino emission of 3C279. The shaded area shows the atmospheric neutrino flux within 1° – from high (horizontal) to vertical.

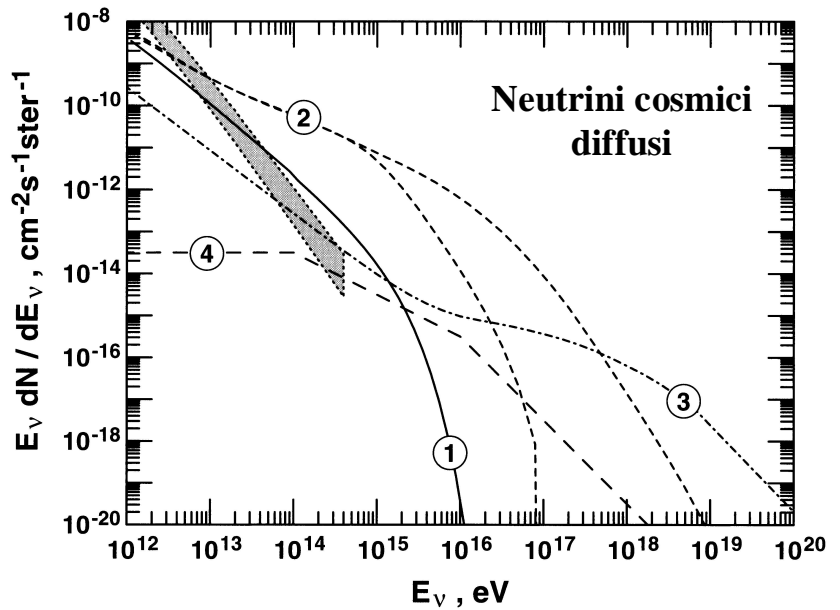
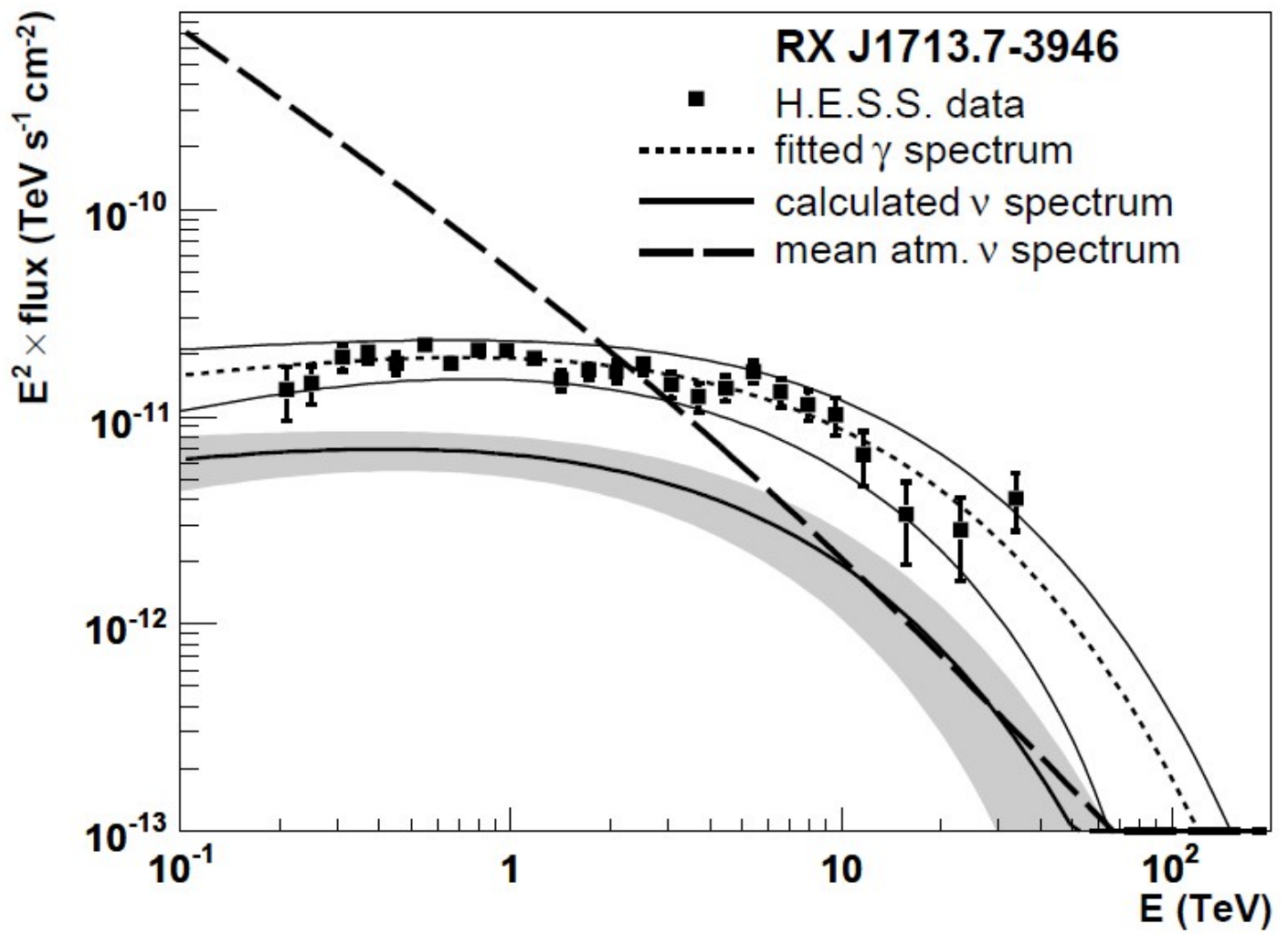


Fig. 10.13. Predictions for diffuse neutrino fluxes. The shaded area shows the horizontal (higher) and vertical fluxes of atmospheric neutrinos. Curve (1) is for the central region of the Galaxy, (2) corresponds to the curves (3) from Fig. 10.12, (3) is the prediction of Ref. [359] and (4) is the prediction of the GRB neutrinos of Ref. [358].



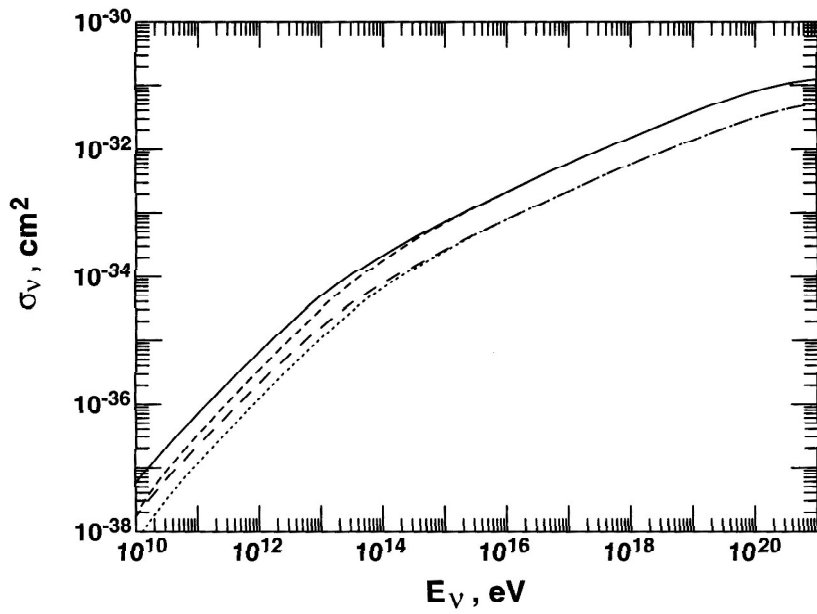
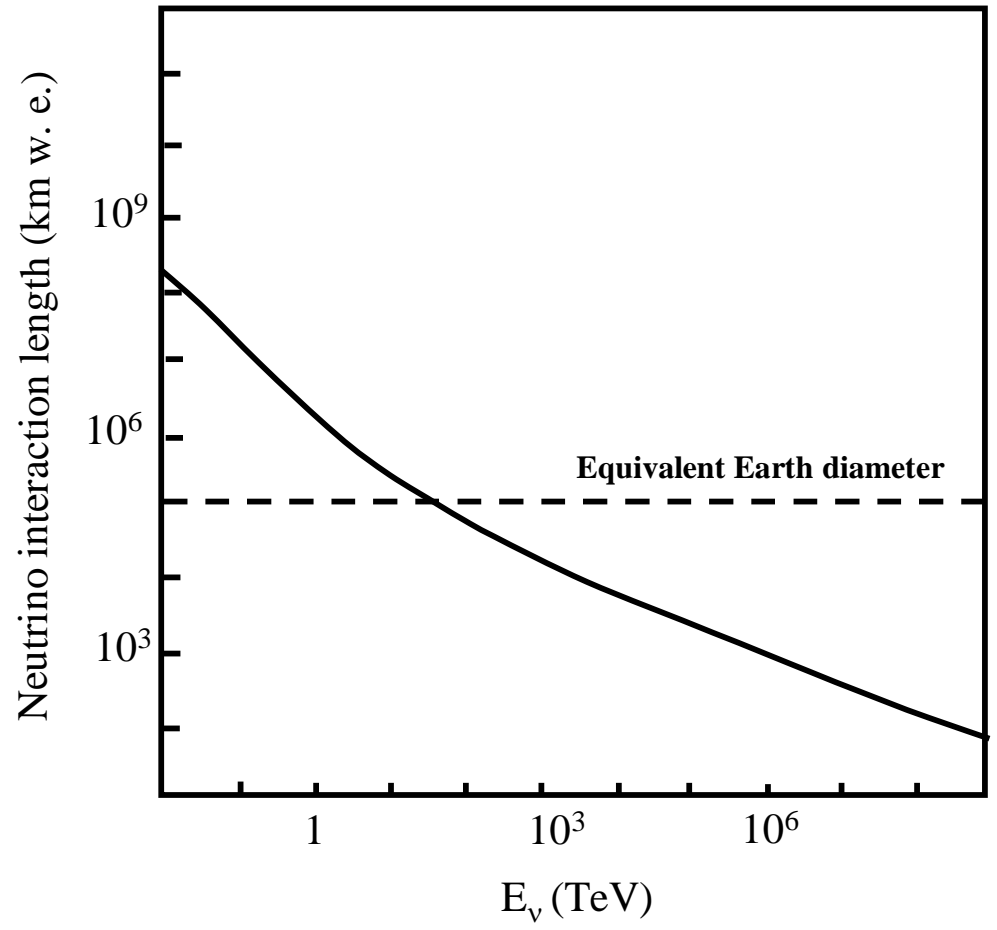
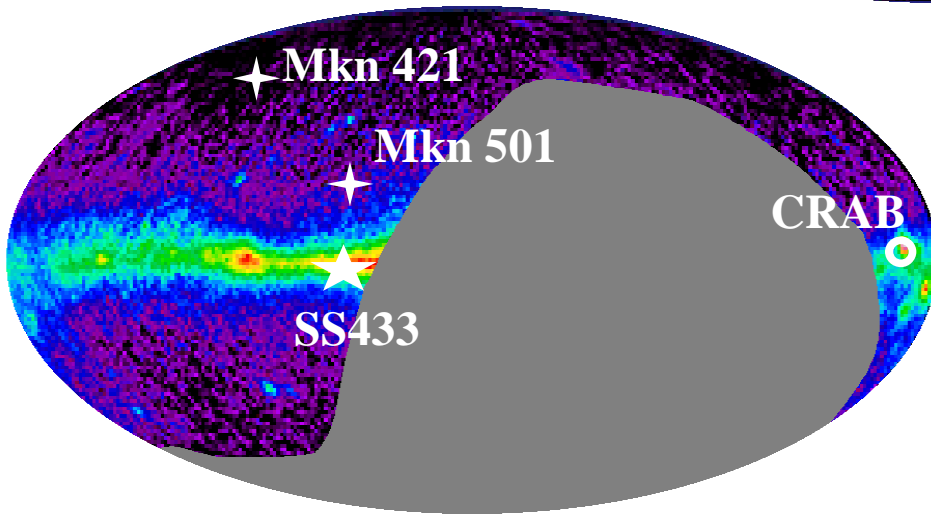
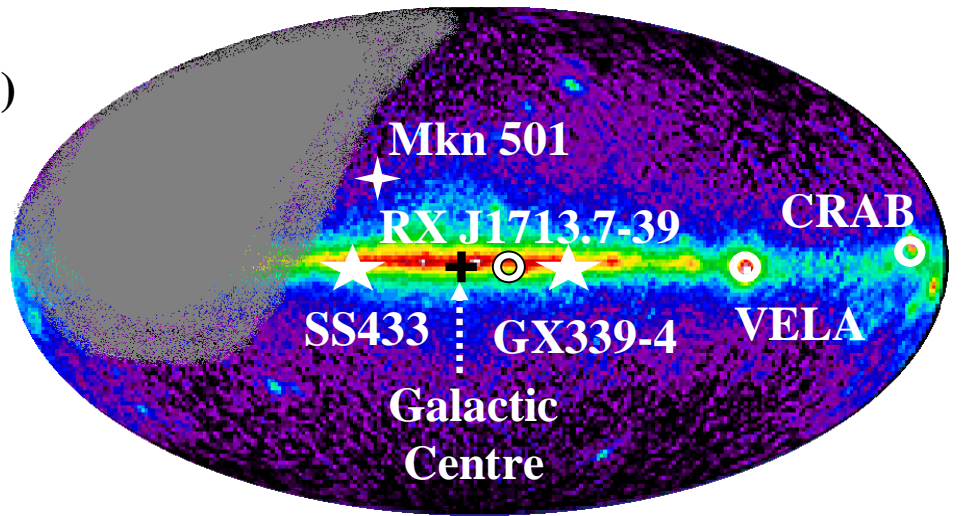


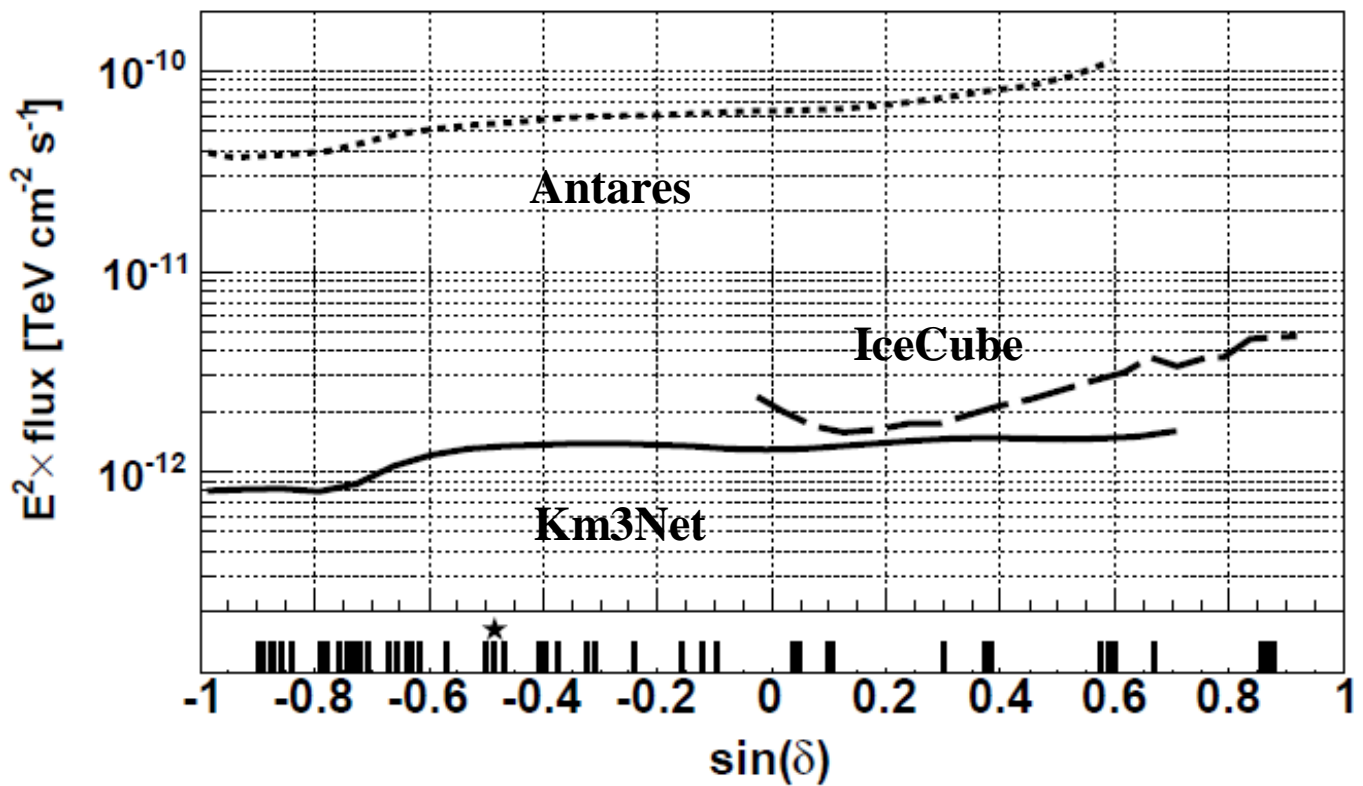
Fig. 10.2. Cross-sections for deep inelastic neutrino scattering. Neutrino CC cross-section is plotted with a solid line, the antineutrino with short dashes. The NC cross-section for neutrinos are plotted with long dashes, and for antineutrinos with a dotted line.



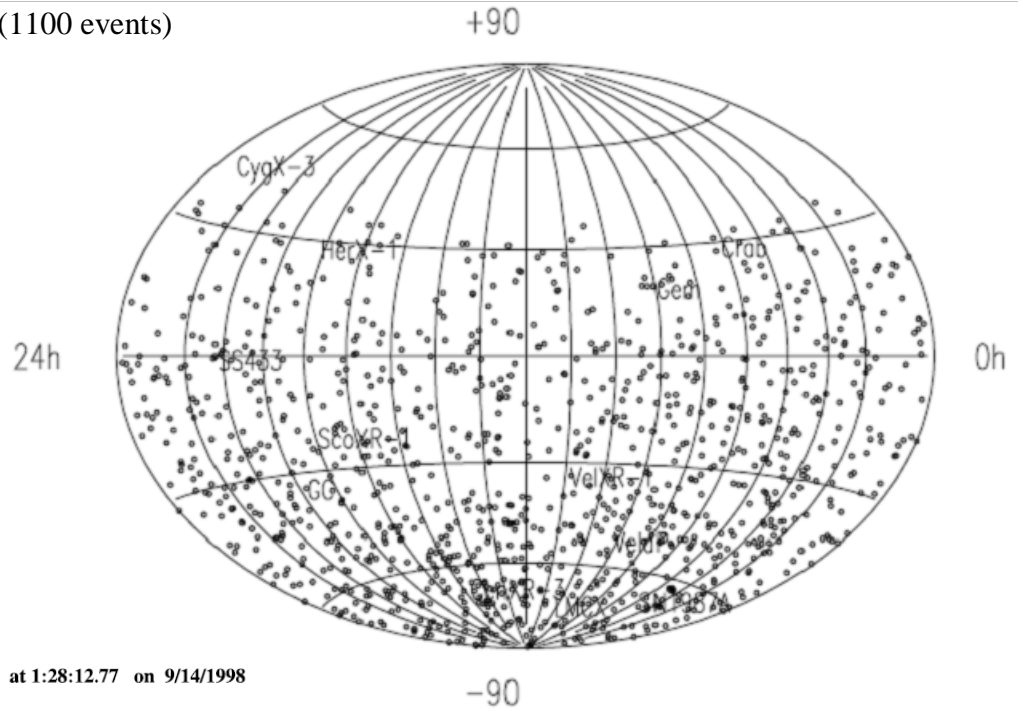
Cielo visibile dal Mediterraneo (43° N)



Cielo visibile dal Polo Sud (90° S)

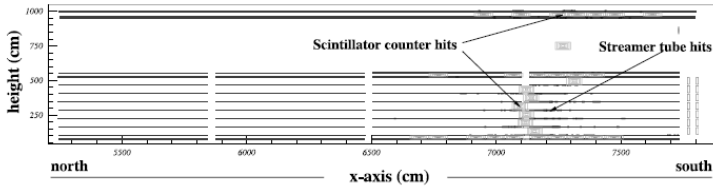


Upward-going muon distribution in equatorial coordinates (1100 events)



RUN 16399 EVENT 2925 at 1:28:12.77 on 9/14/1998

	T	C	B	E	W	N	S
Number of scintillator boxes	7	6	10	2	7	0	0



RUN 19574 EVENT 2198 at 10:33:47.90 on 5/24/2000

	T	C	B	E	W	N	S
Number of scintillator boxes	6	3	3	0	0	0	0

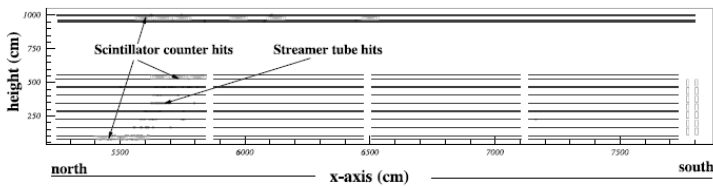
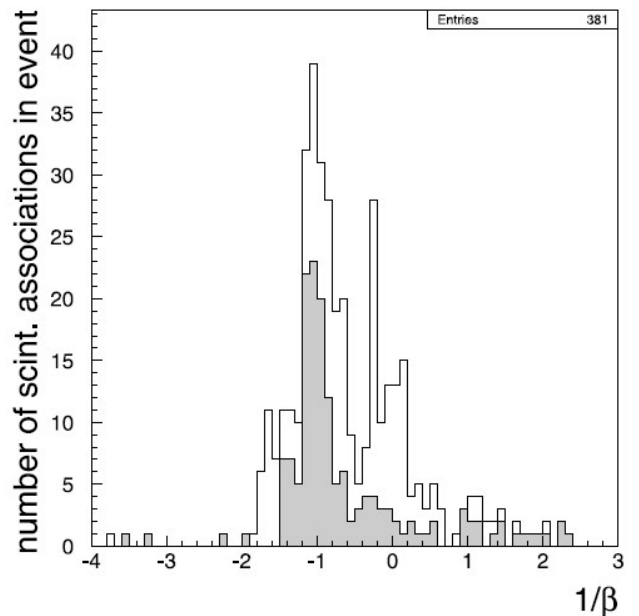


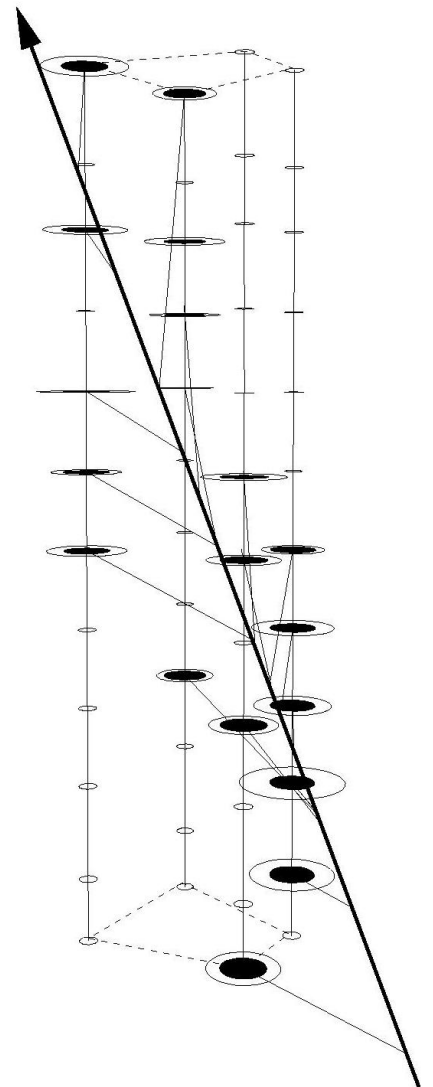
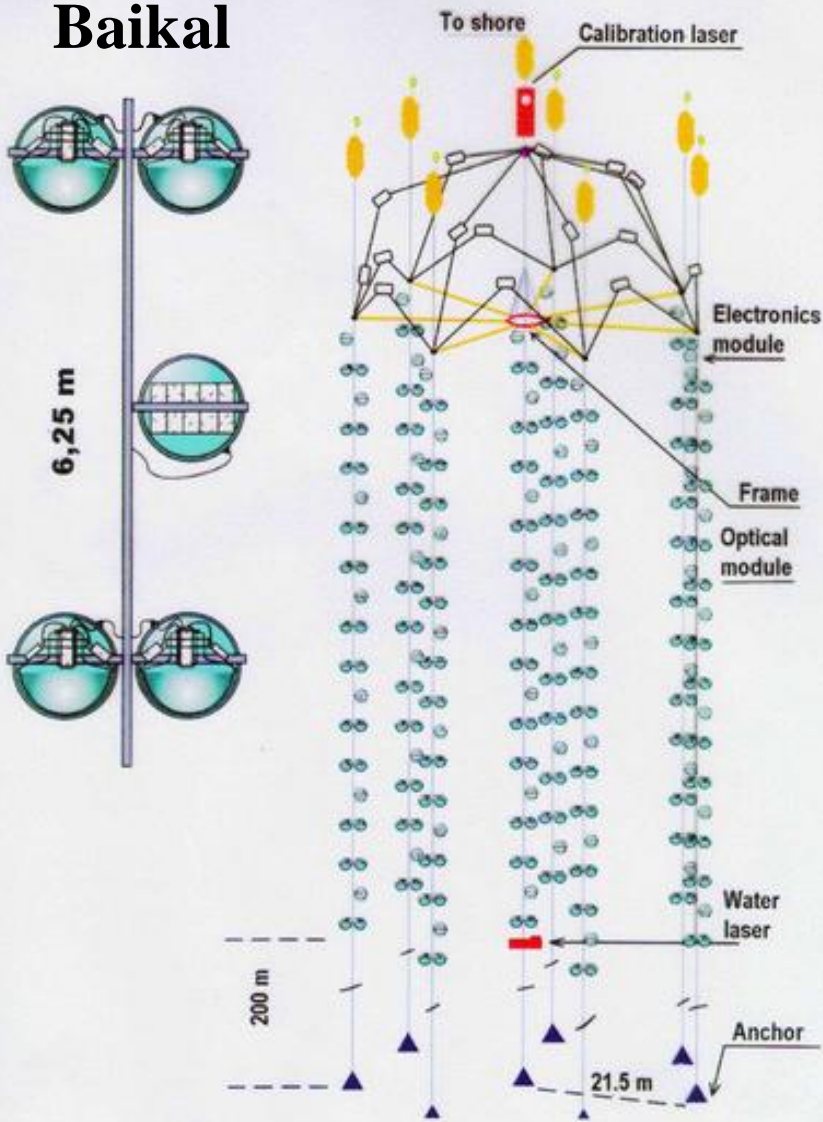
Fig. 8. Display of the two surviving events (longitudinal view) along the x-axis. The horizontal lines represent the 10 + 4 planes of horizontal streamer tube wires in the bottom and in the "Attico" parts of the detector. The wire hits are represented by black points. The gray boxes represent scintillator hits. Thirty-two scintillation counters overall fired in the first event which correspond to 381 scintillator tracks, whose $1/\beta$ values are shown in Fig. 5. Twelve counters fired in the second event. The location of fired scintillation counters is also given: T → Top, C → Central, B → Bottom, E → East, W → West, N → North, S → South, respectively.



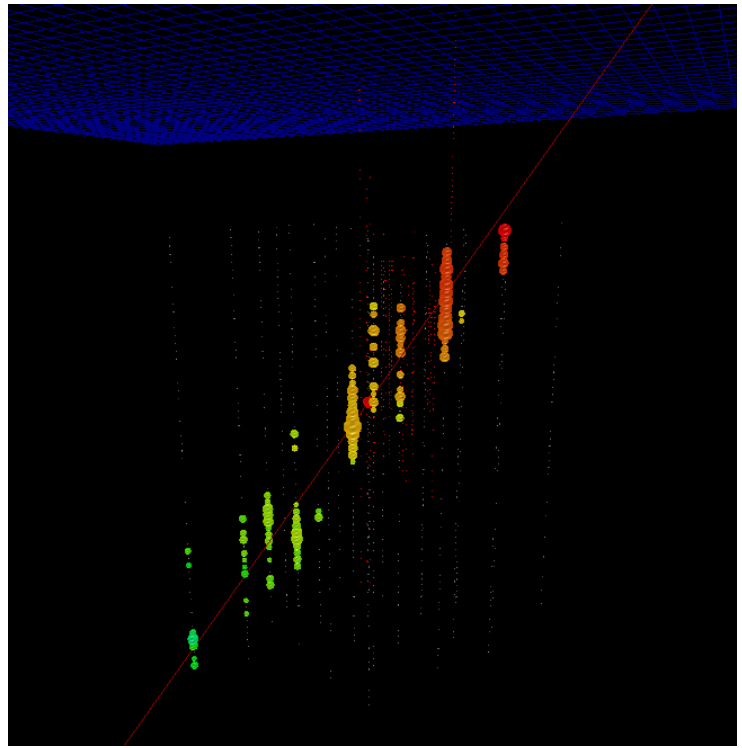
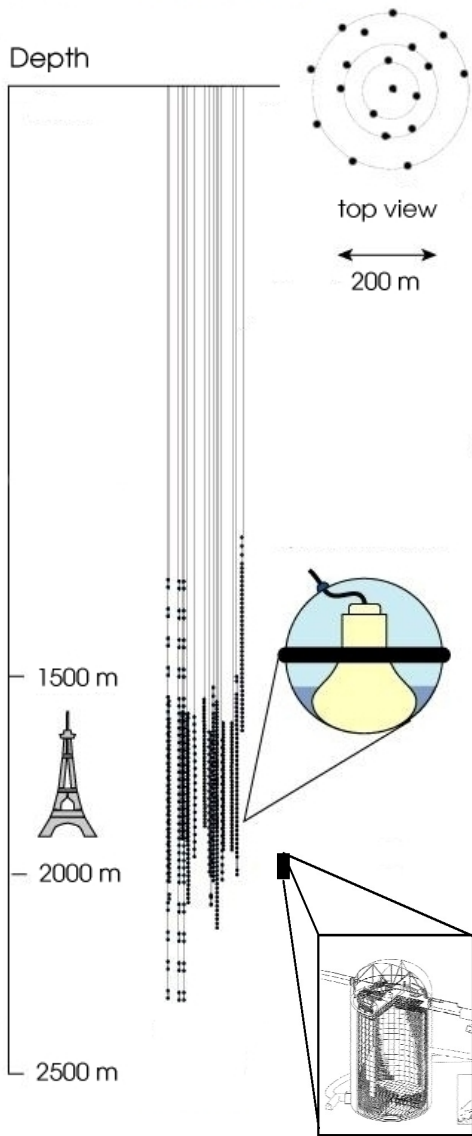
NEUTRINO TELESCOPE NT-200

Domo-06

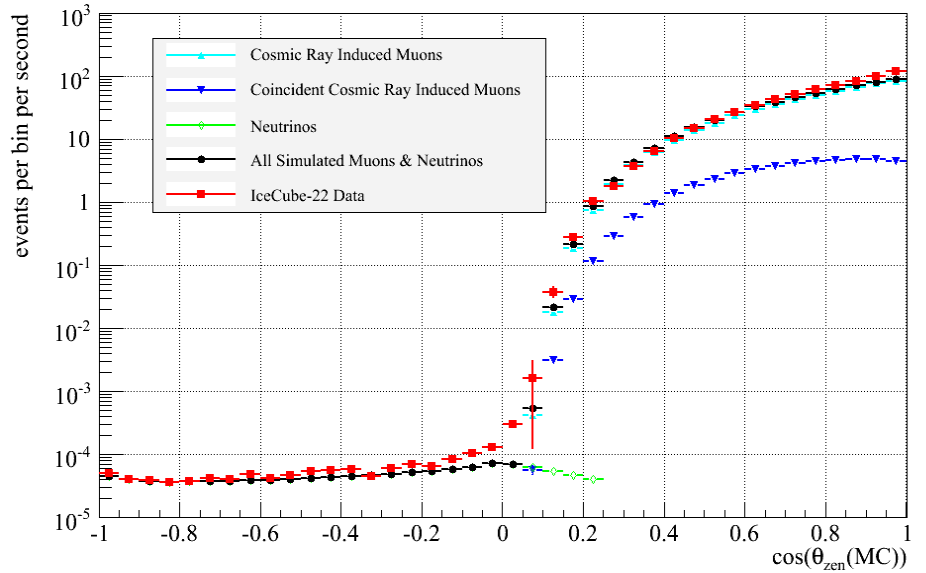
Baikal



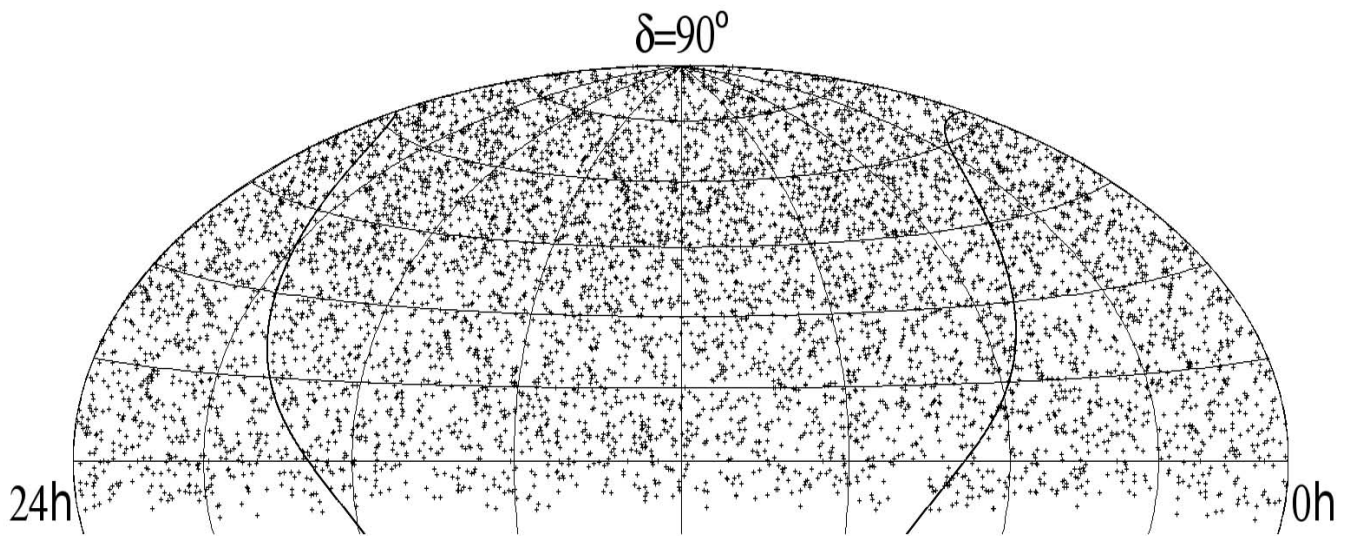
AMANDA-II



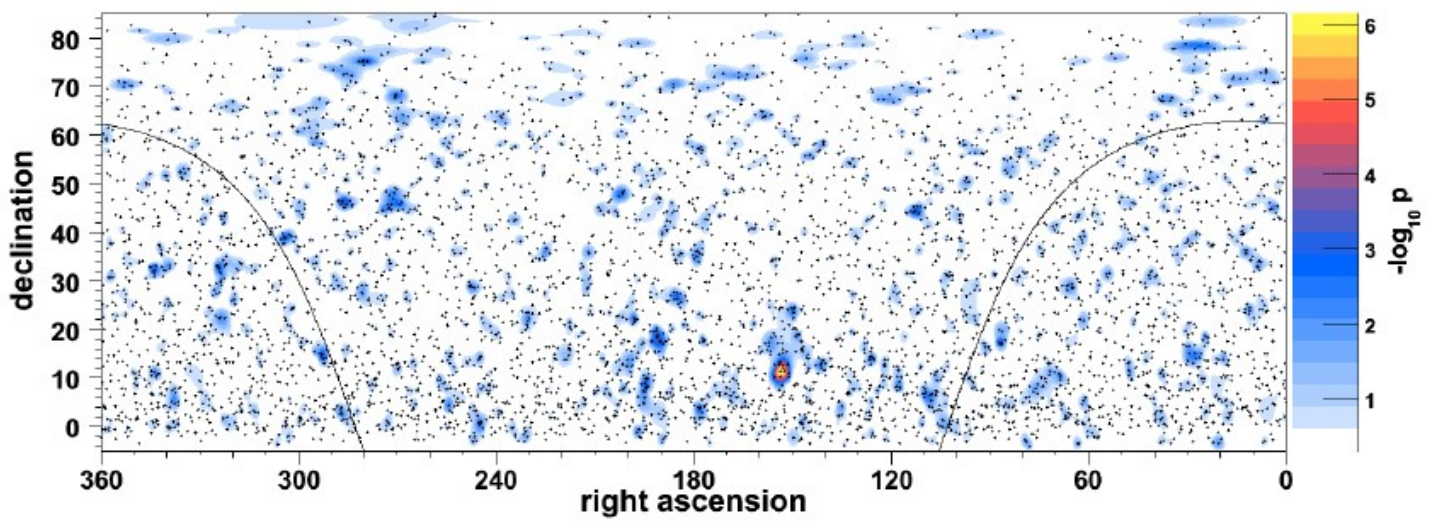
IceCube-22 Data vs. Monte Carlo Simulation Data

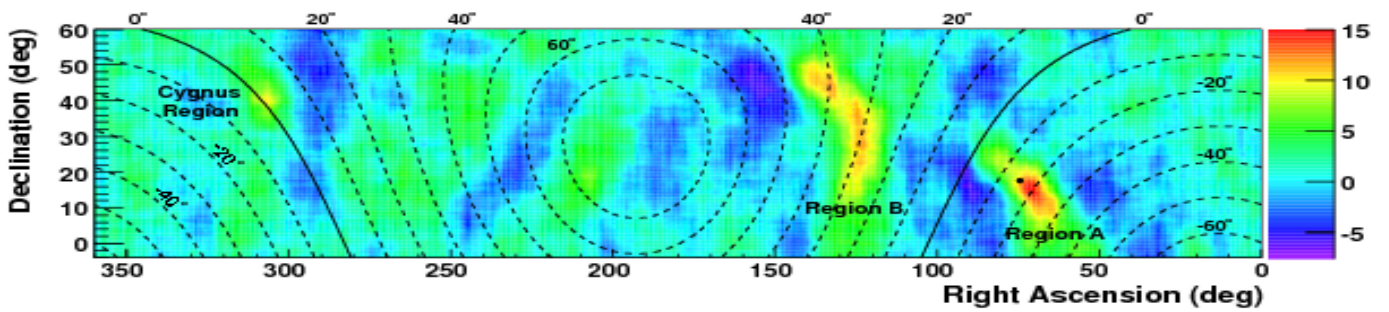
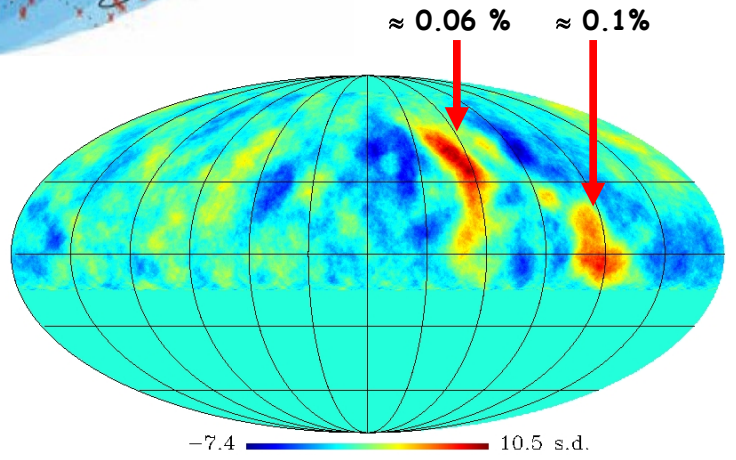
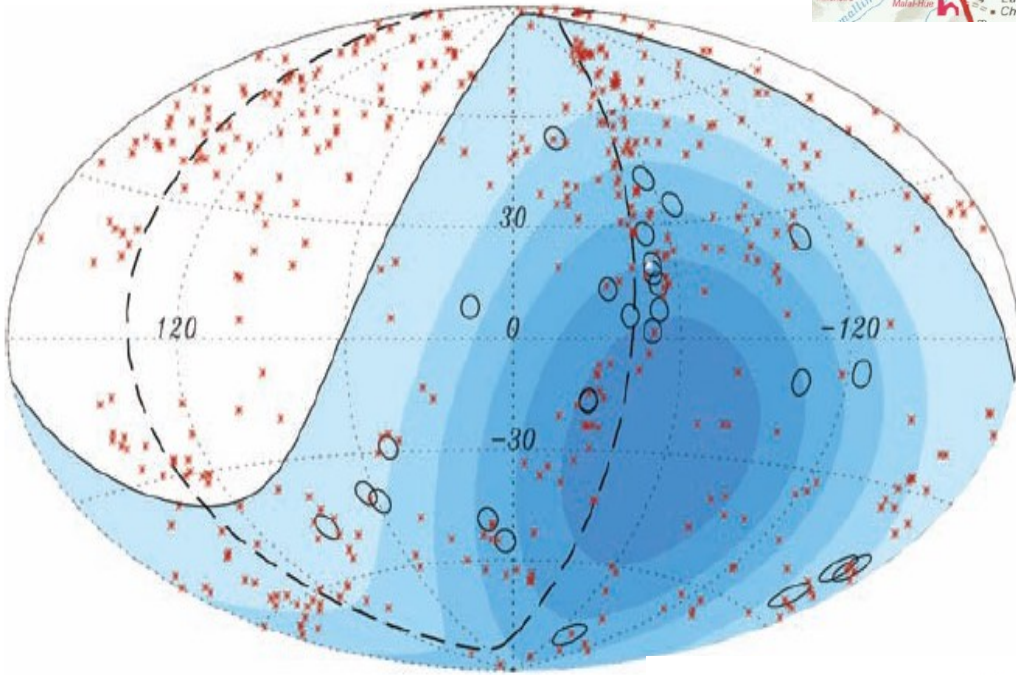
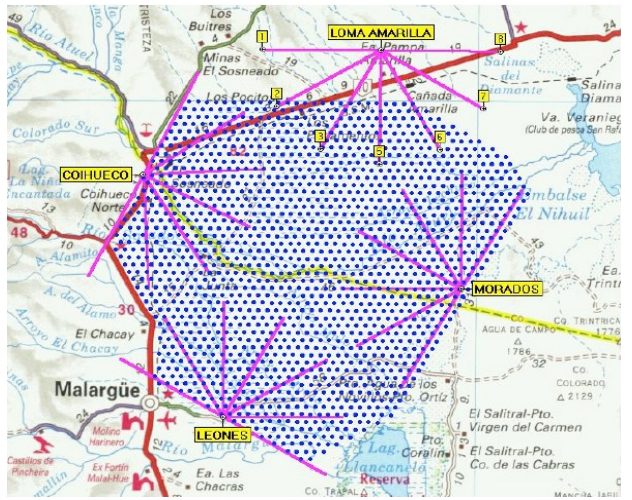


AMANDA 6595 events below horizon
see <http://www.icecube.wisc.edu/science/data>



ICECUBE – 22 strings





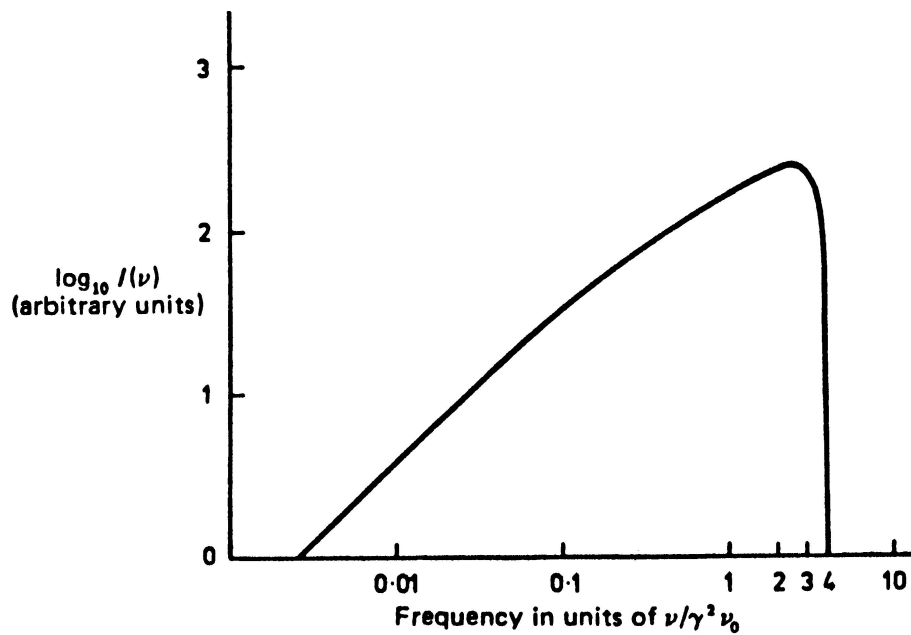
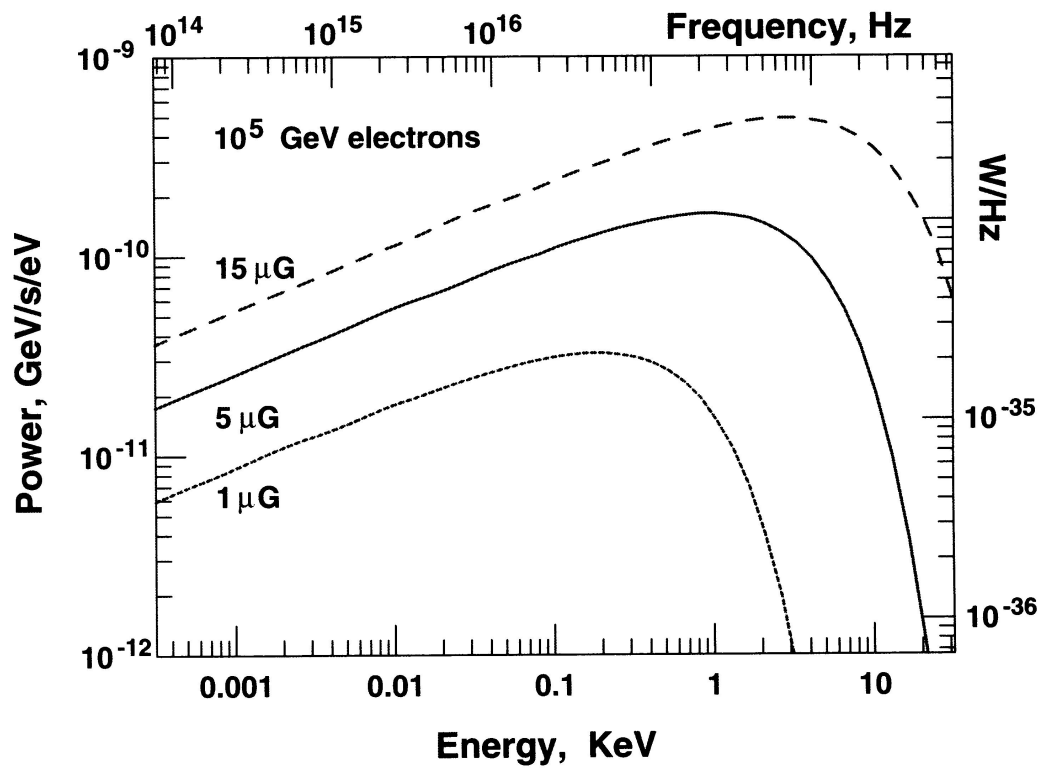
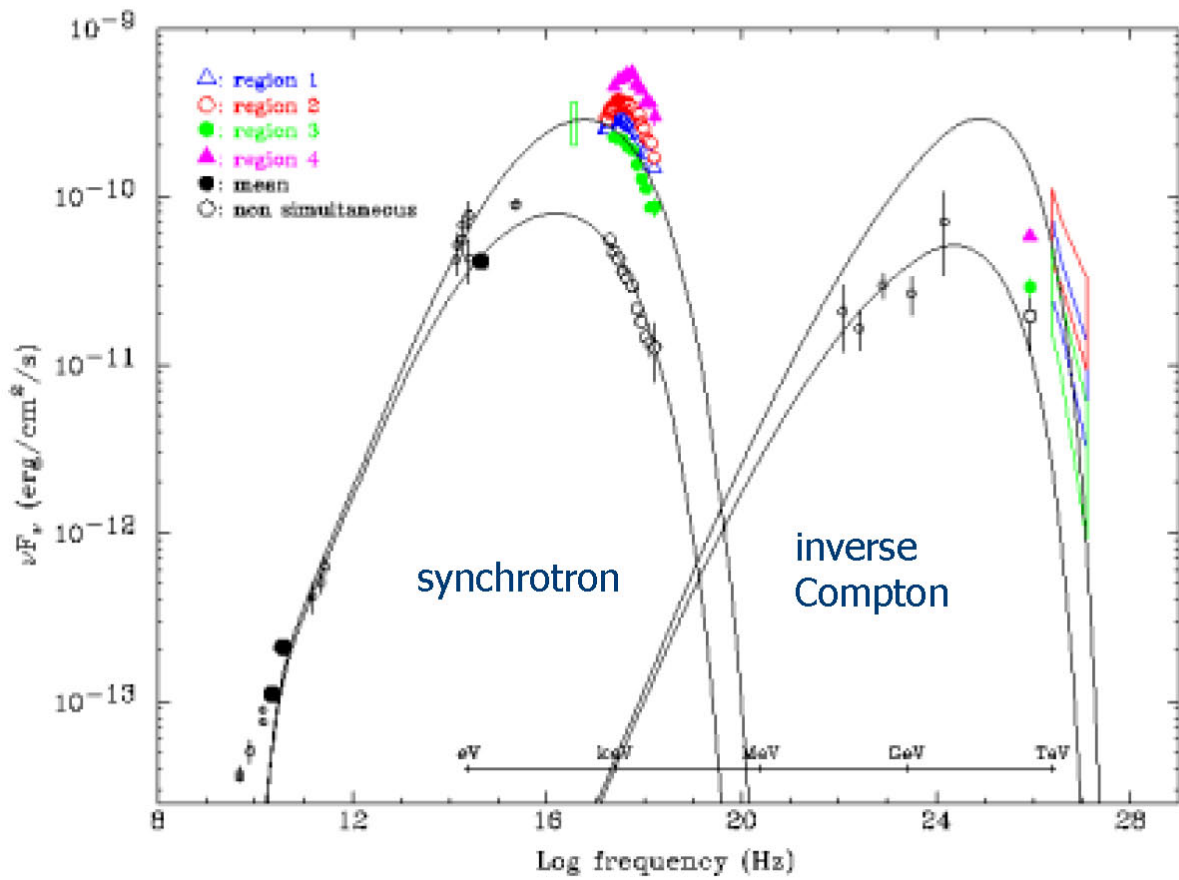
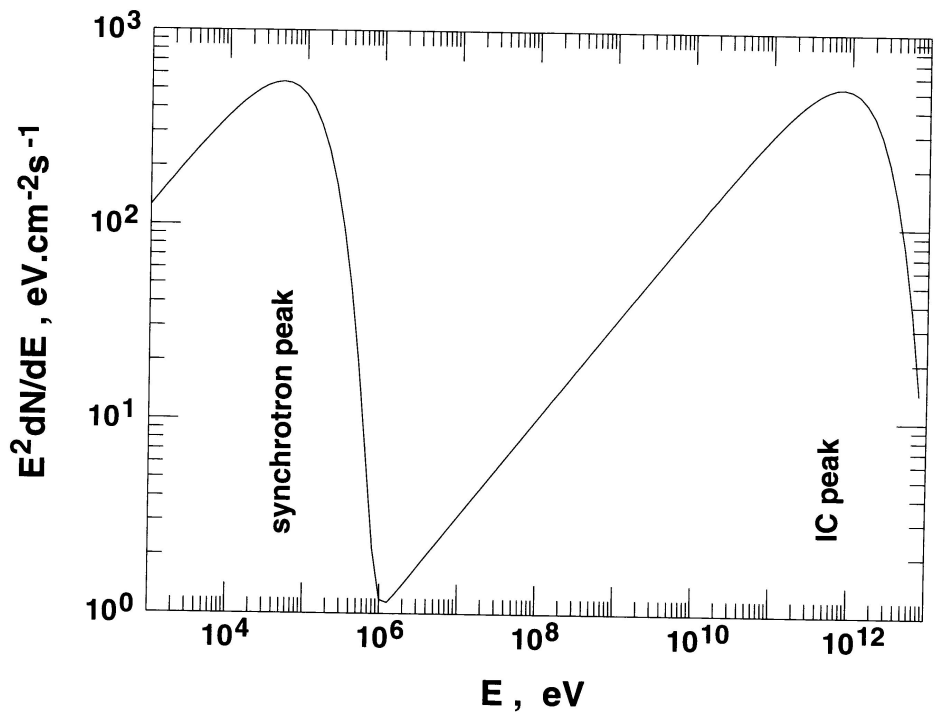
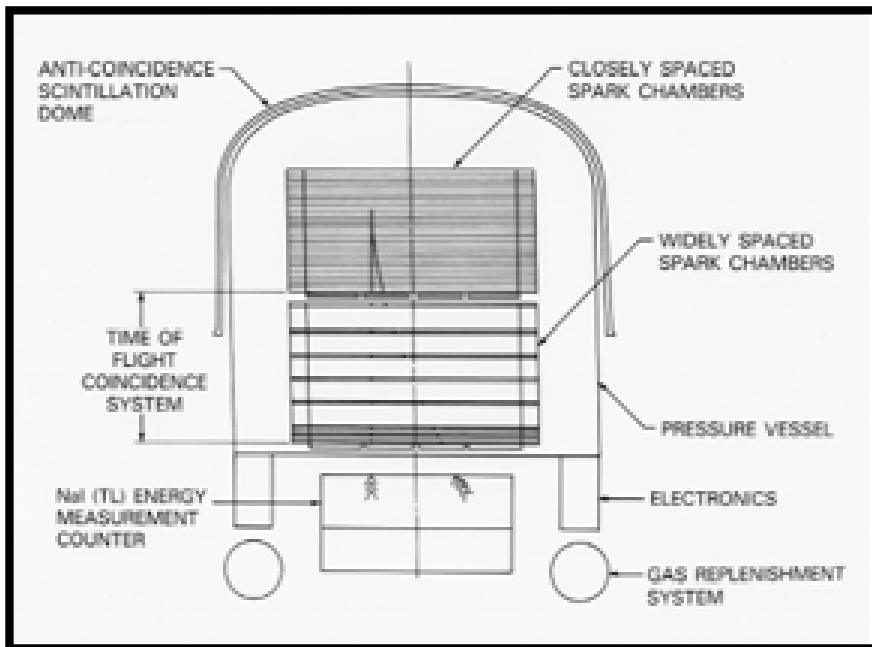
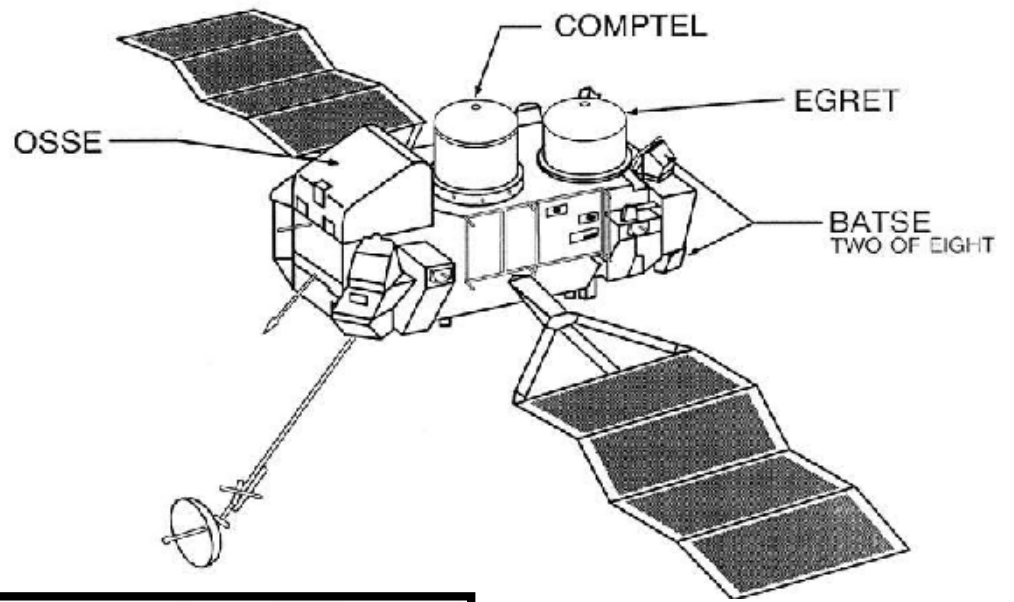
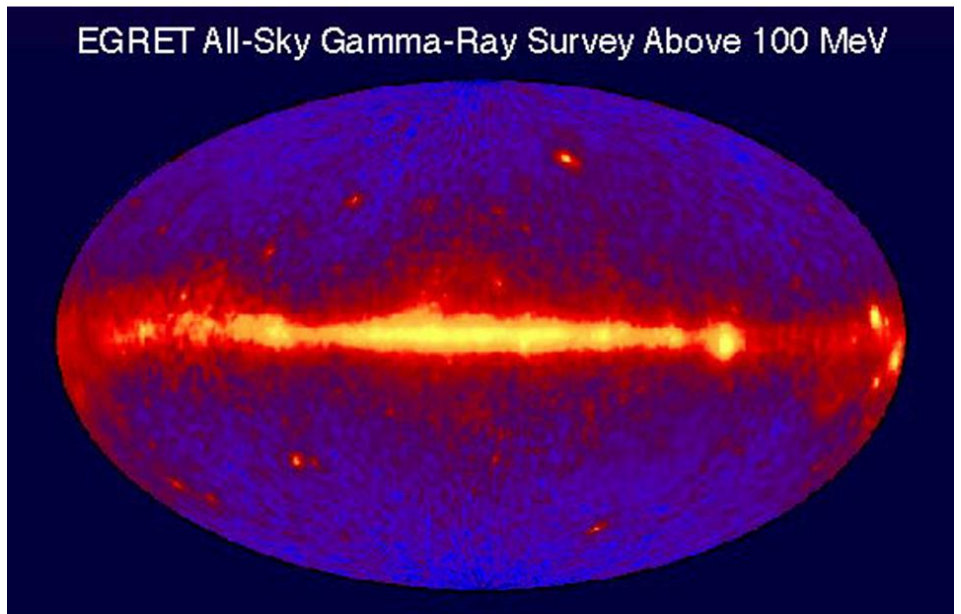


Figure 4.8. The emission spectrum of inverse Compton scattering; ν_0 is the frequency of the unscattered radiation. (From G. R. Blumenthal and R. J. Gould (1970). *Rev. Mod. Phys.*, **42**, 237.)





EGRET All-Sky Gamma-Ray Survey Above 100 MeV



Tracciatore al silicio (TKR)
Misura la direzione del fotone



Anticoincidenza Segmentata (ACD)
Rimuove il fondo di particelle cariche
Riduce il self-veto alle alte energie



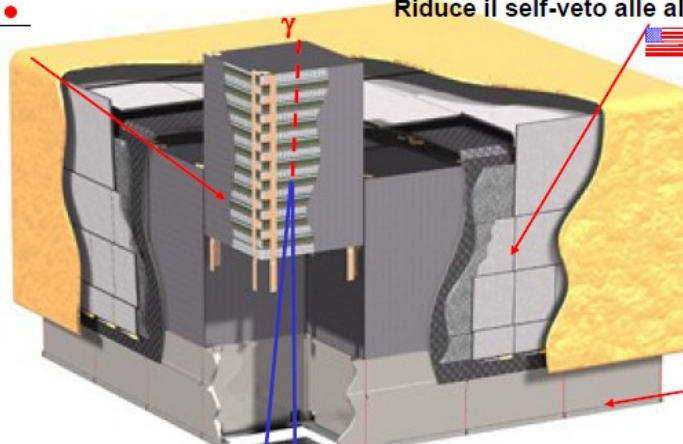
LAT:
modulare, 4 x 4
3000 kg, 650 W

HEP and astrophysics partnership

USA: US Dept. Of Energy, SU-SLAC, NASA GSFC, NRL
Italy: INFN, ASI, Inst. CR Res (IFC)

Japan: Univ. Tokyo, Univ. Hiroshima, Inst. Space Science, Inst. CR Res. (ICCR)

France: CEA, CNES, IN2P3
Sweden: Royal Inst. Tech., Univ. Stockholm



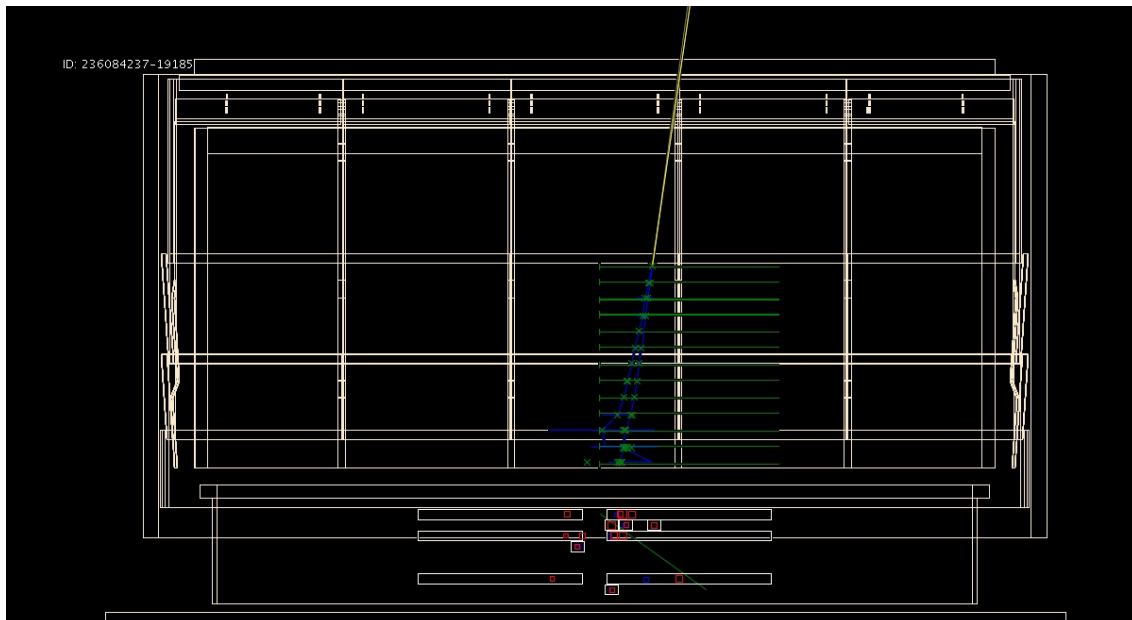
GRID
"Spina dorsale"



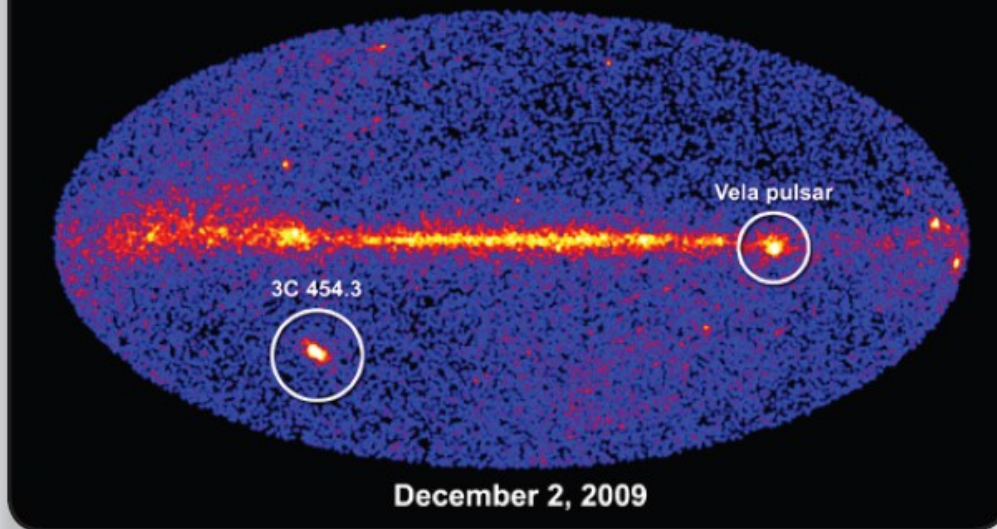
Elettronica e SW di volo
Sistema di presa dati



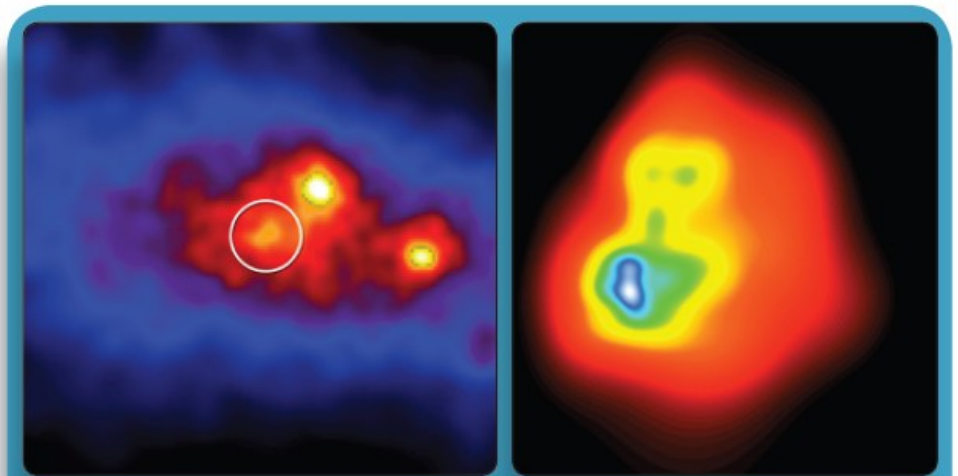
Calorimetro Csi (CAL)
Misura l'energia dell'evento
Misura il profilo dello sciame EM



Blazar 3C 454.3's Record Flare

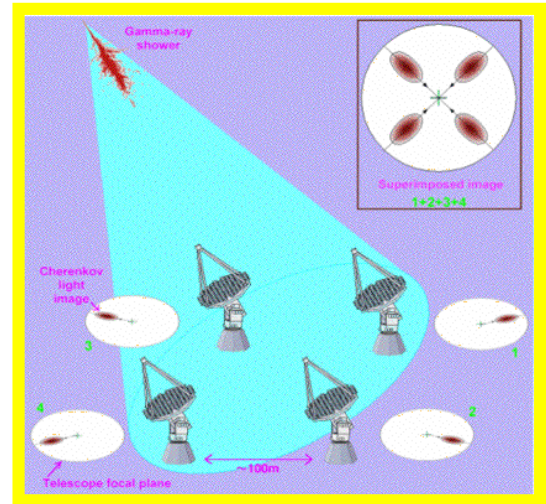
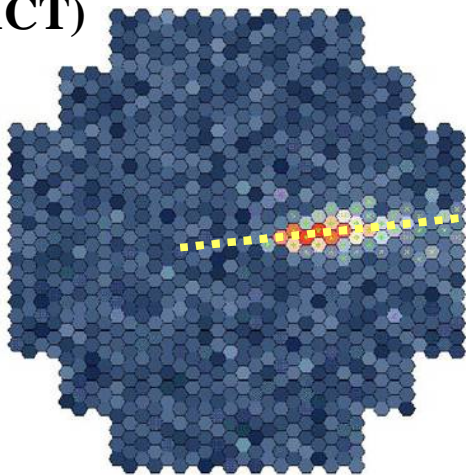


Unprecedented flares from the blazar 3C 454.3 in the constellation Pegasus now make it the brightest persistent gamma-ray source in the sky. That title usually goes to the Vela pulsar in our galaxy, which is millions of times closer (Credit: NASA/DOE/Fermi LAT Collaboration).

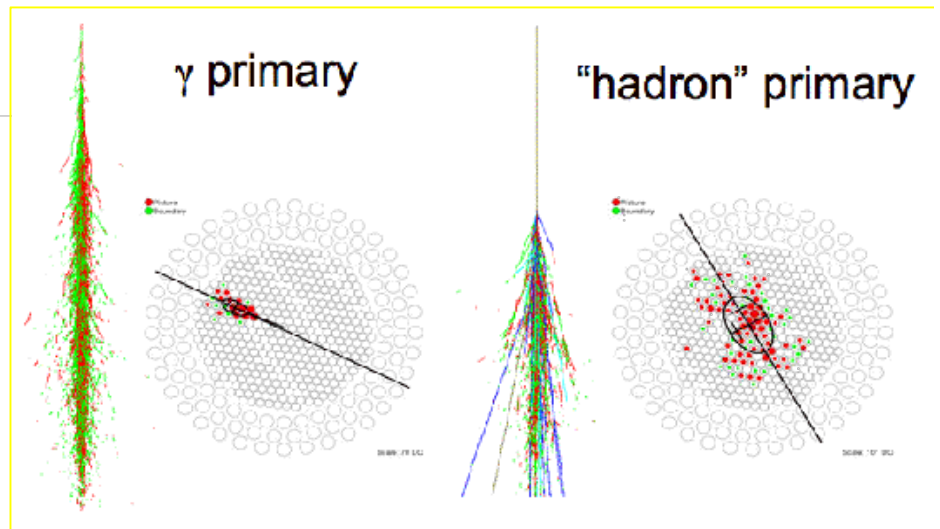
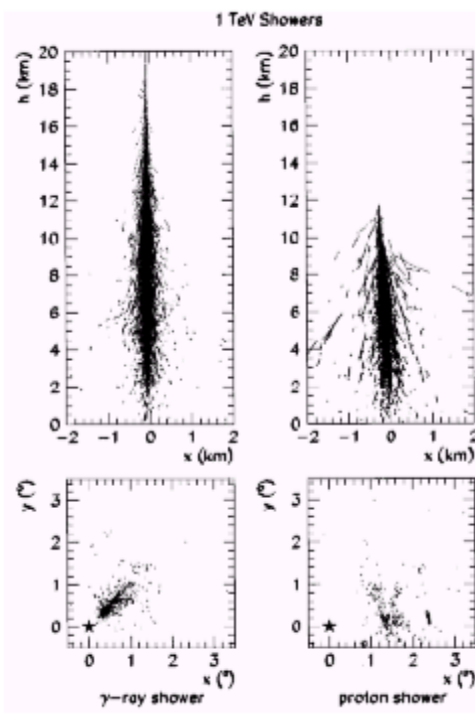


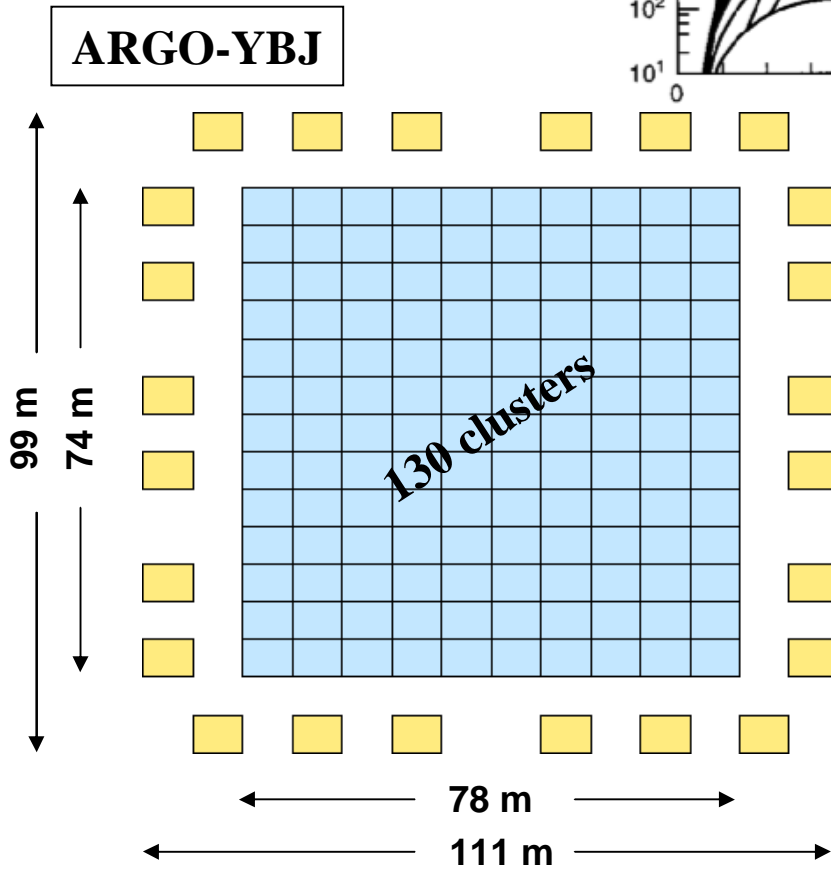
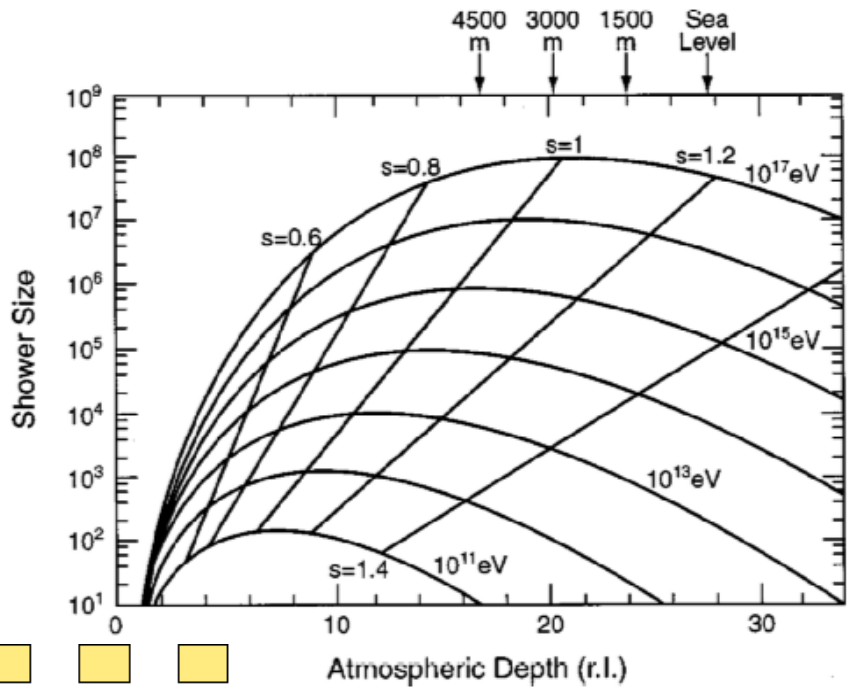
Left: the Fermi Telescope has made the first unambiguous detection of high-energy gamma-rays from the microquasar Cygnus X-3. Right: Fermi's Large Area Telescope (LAT) has shown that an intense star-forming region in the Large Magellanic Cloud is also a source of diffuse gamma rays. Brighter colours indicate larger numbers of detected gamma rays (Credit: Fermi collaboration).

Ricostruzione mono (ACT)

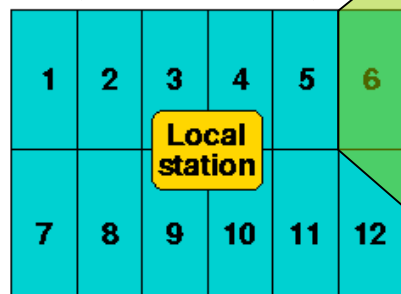


Ricostruzione stereo (IACT)

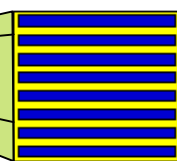




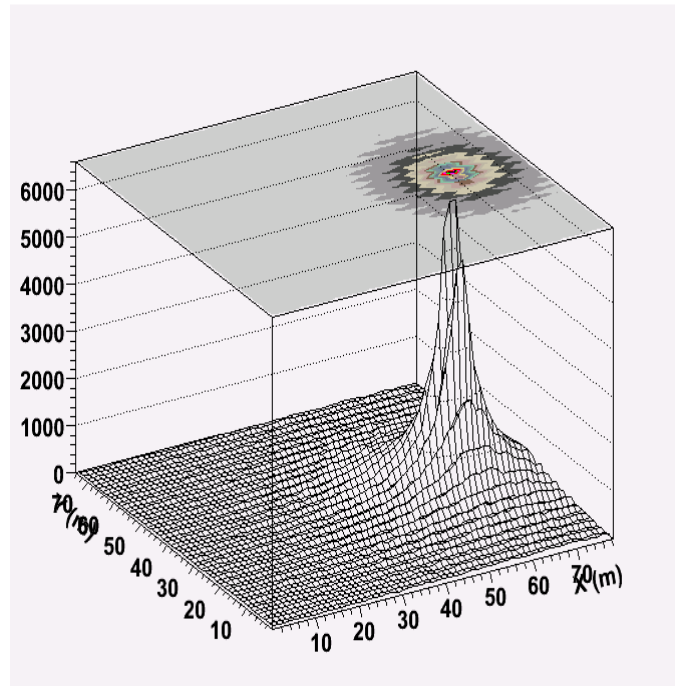
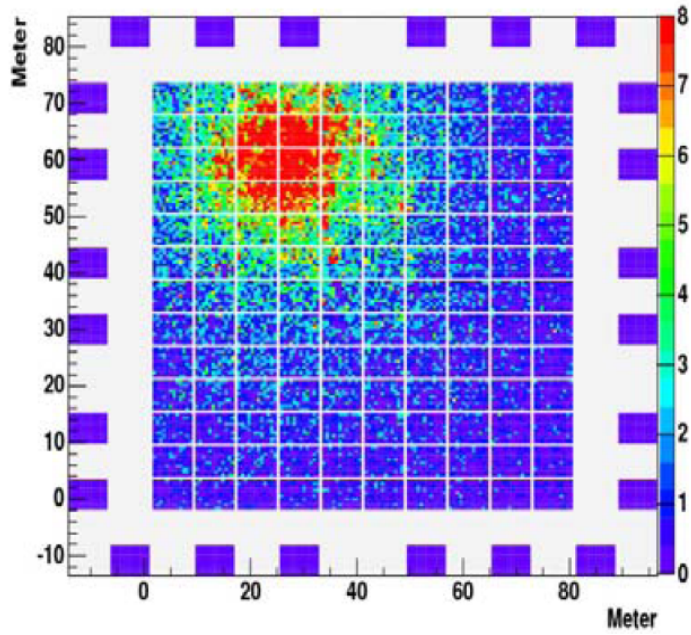
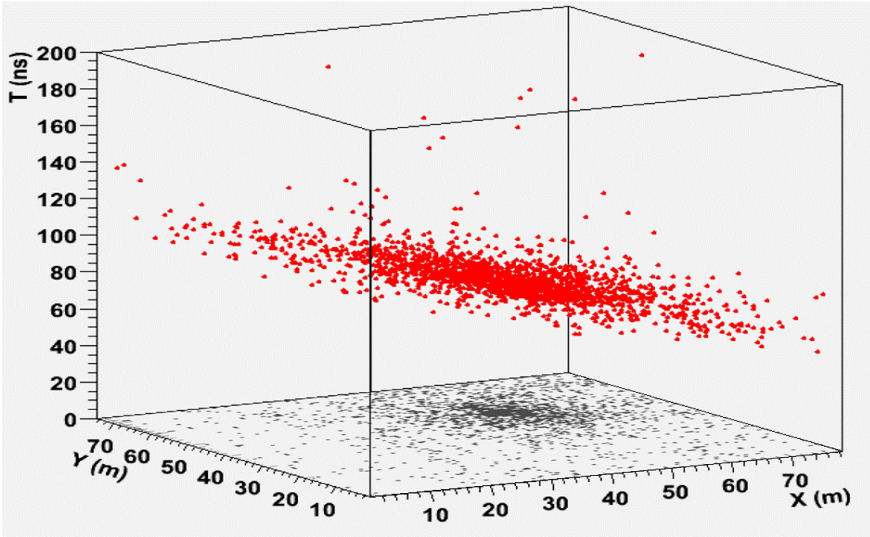
12 RPC = 1 cluster
($5.7 \times 7.6 \text{ m}^2$)

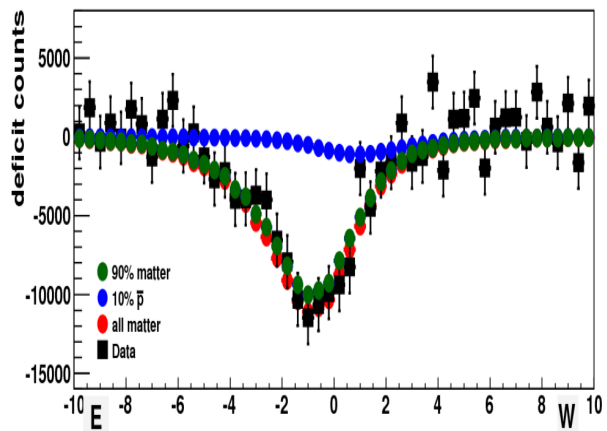
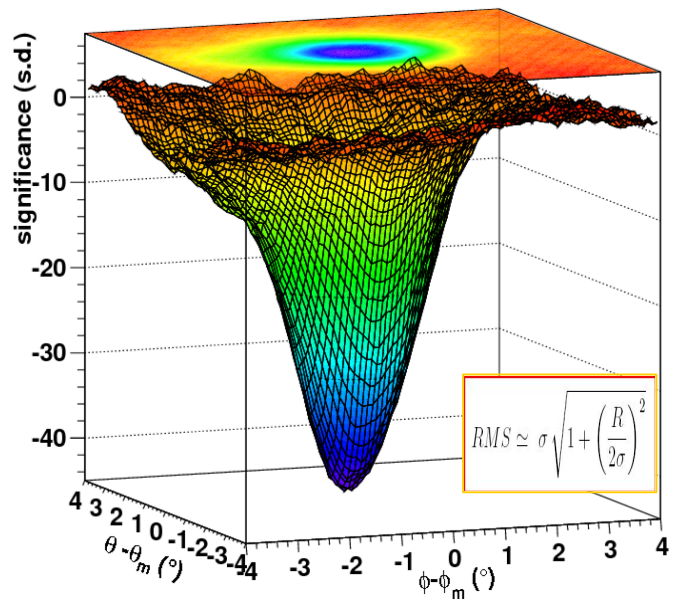
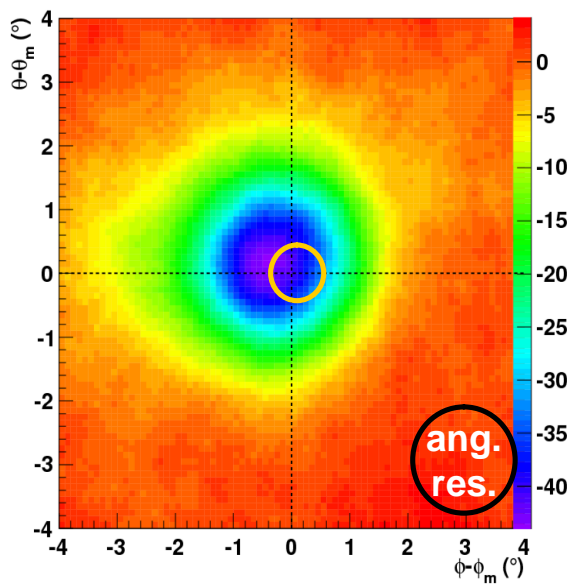
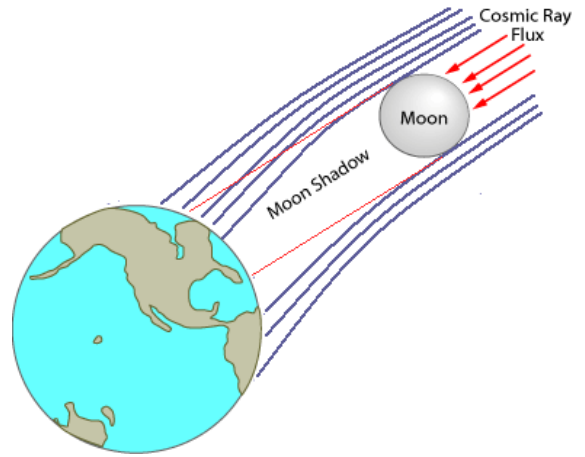
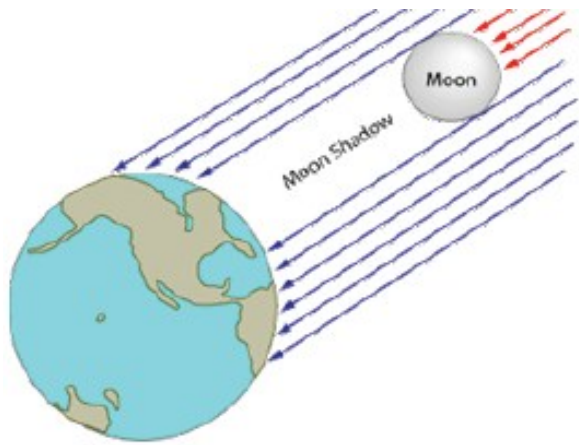


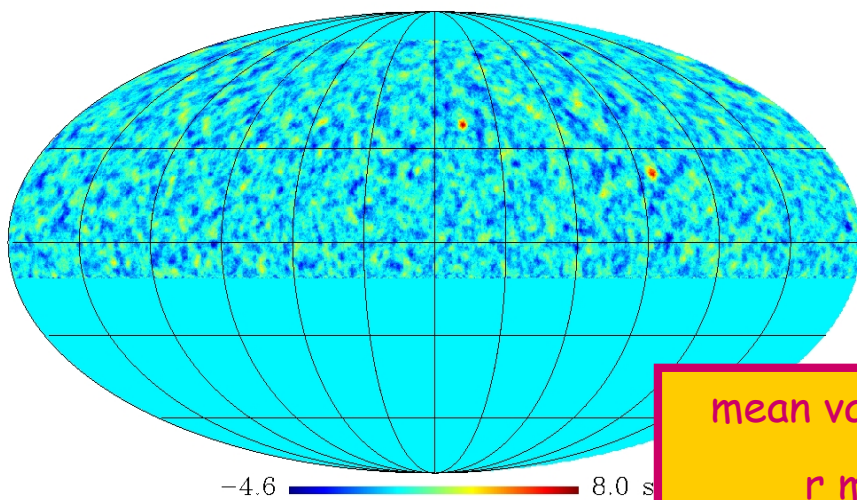
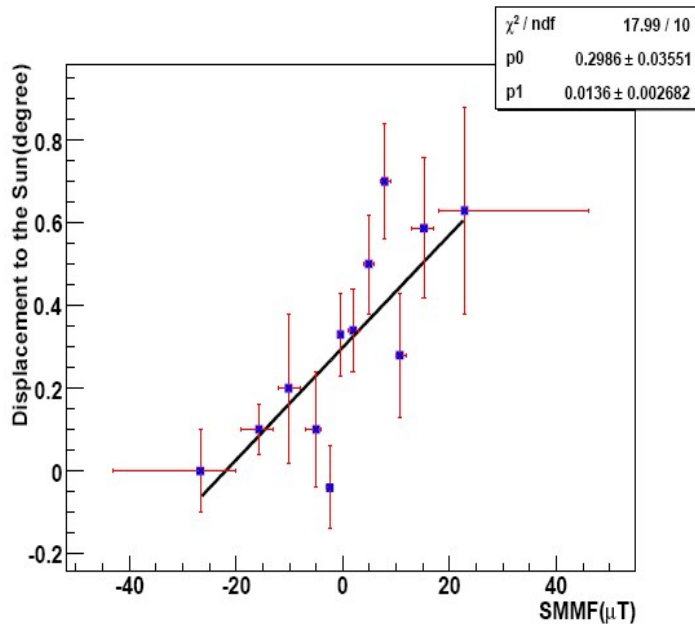
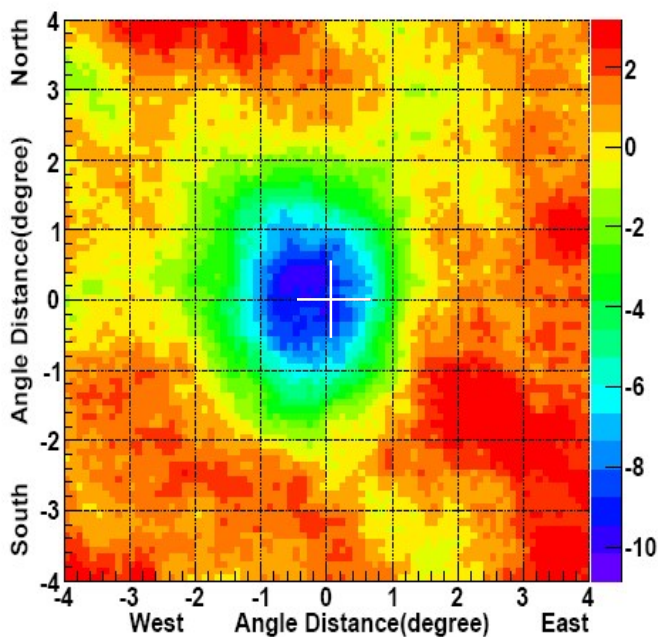
8 Strips = 1 Pad
($56 \times 62 \text{ cm}^2$)



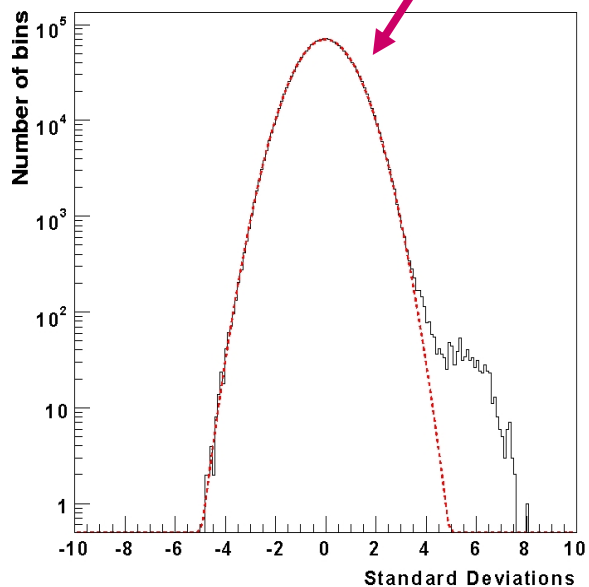
10 Pads = 1 RPC
($2.80 \times 1.25 \text{ m}^2$)

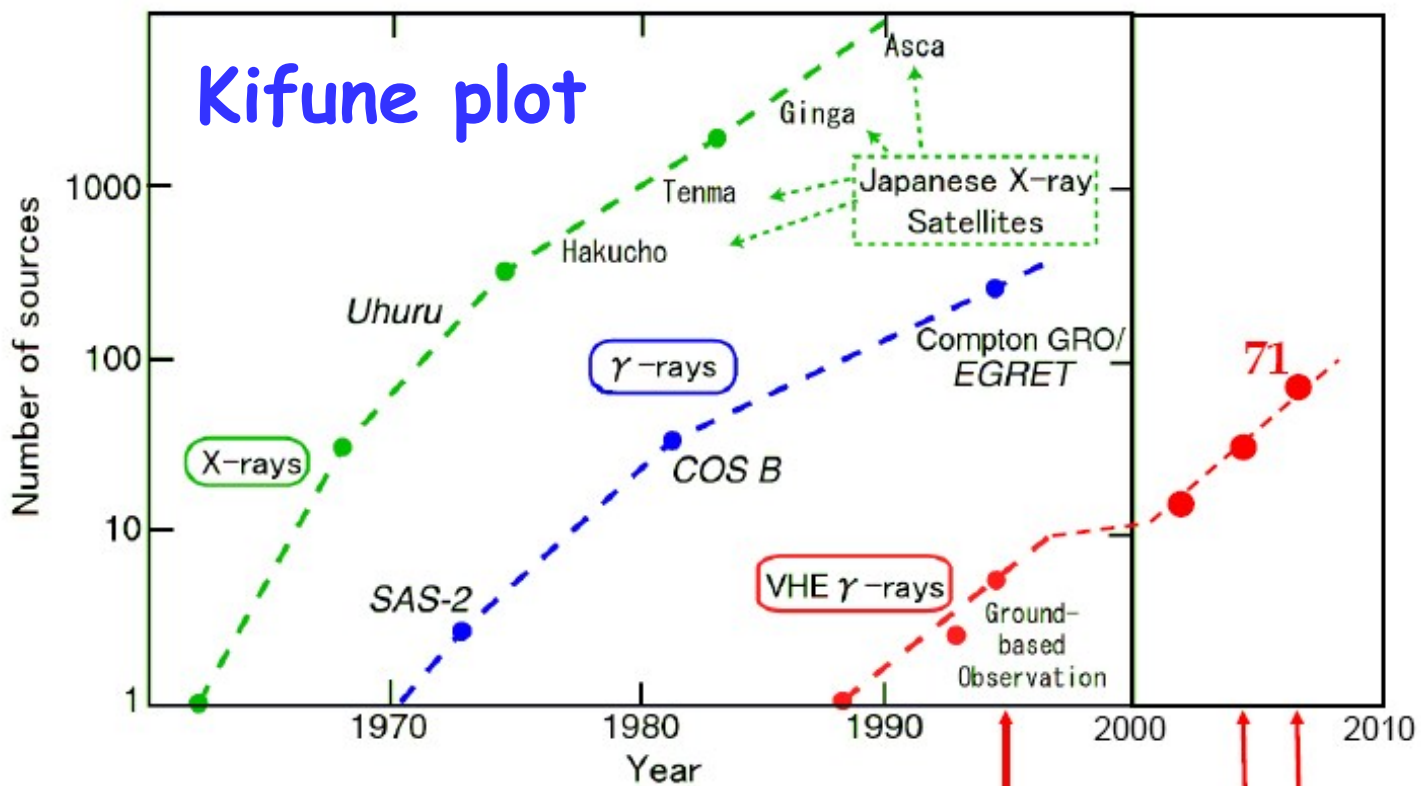
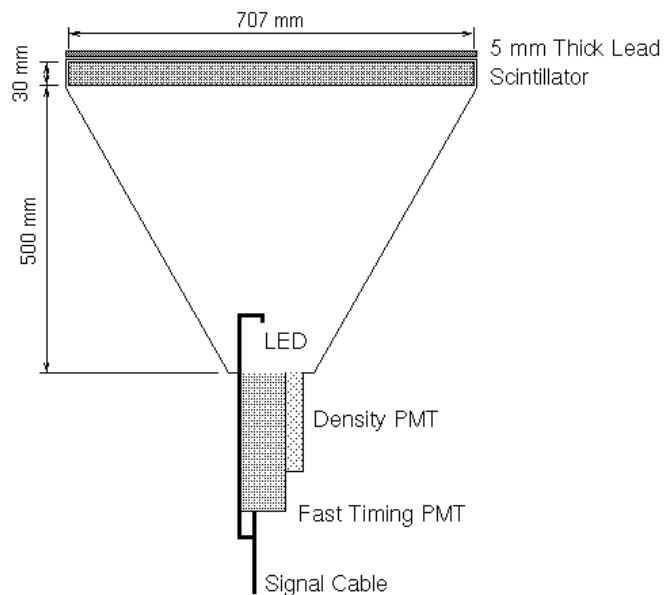
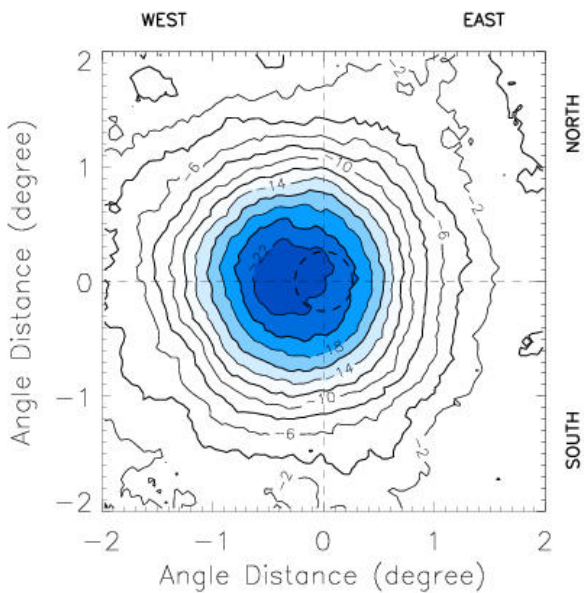




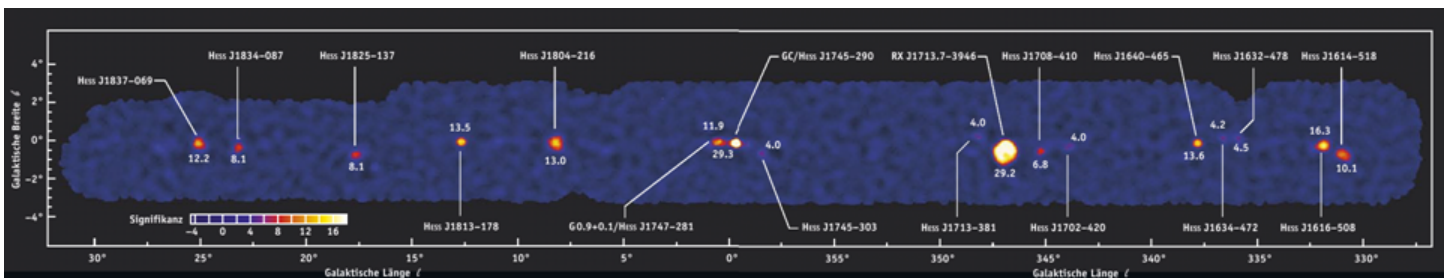
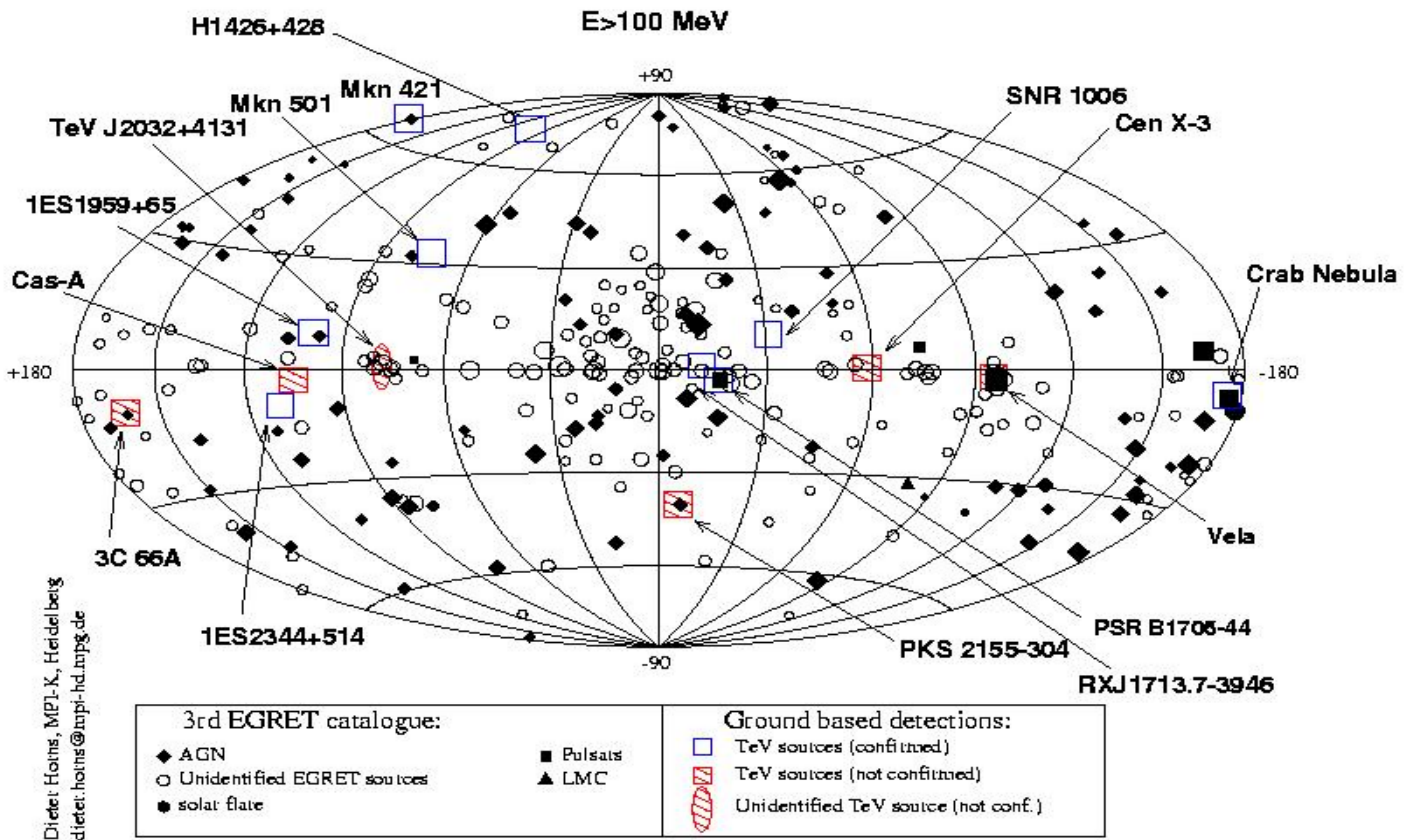


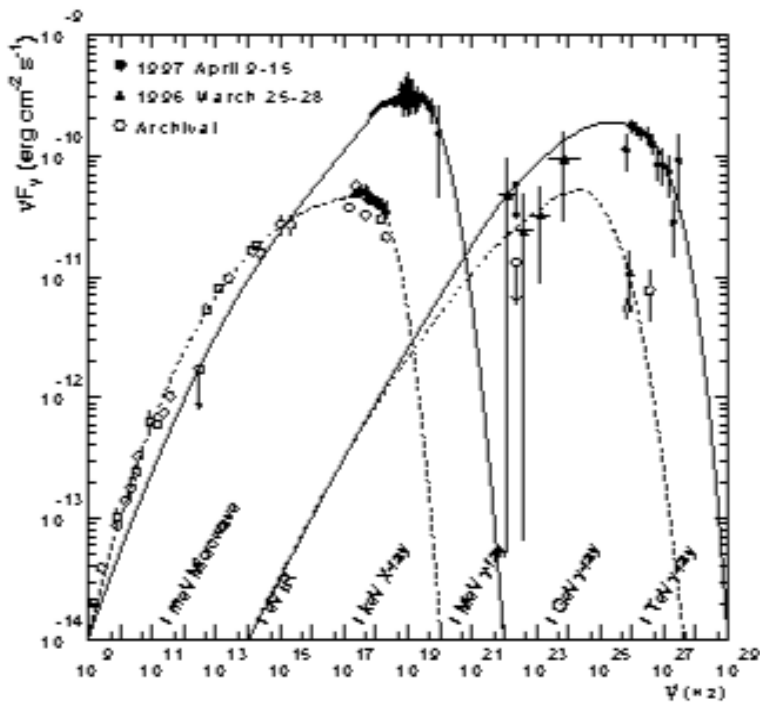
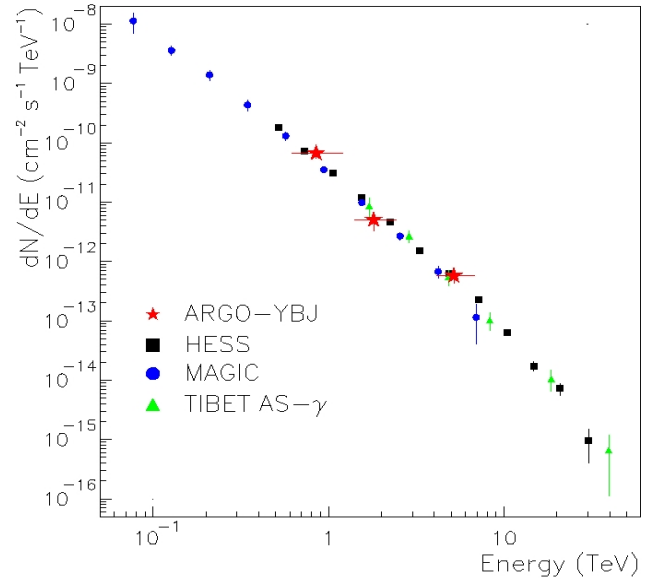
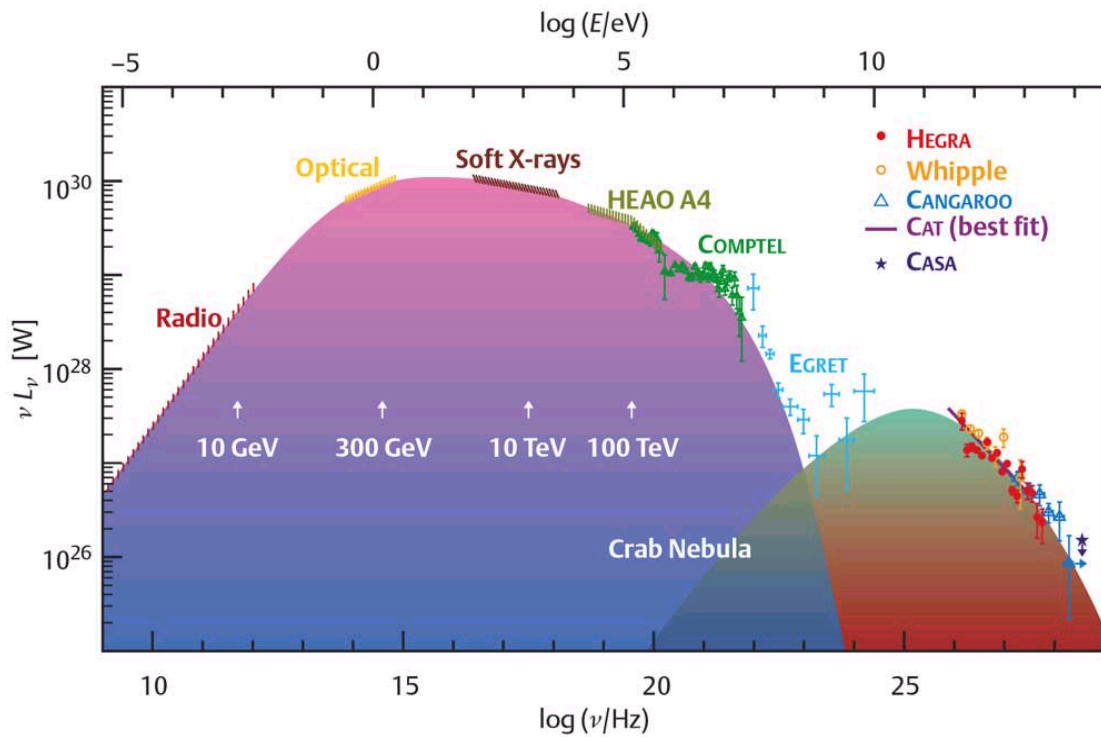
mean value = $(-3.6 \pm 0.8) \times 10^{-3}$
 r m s = $(1.0 \pm 5) \times 10^{-4}$

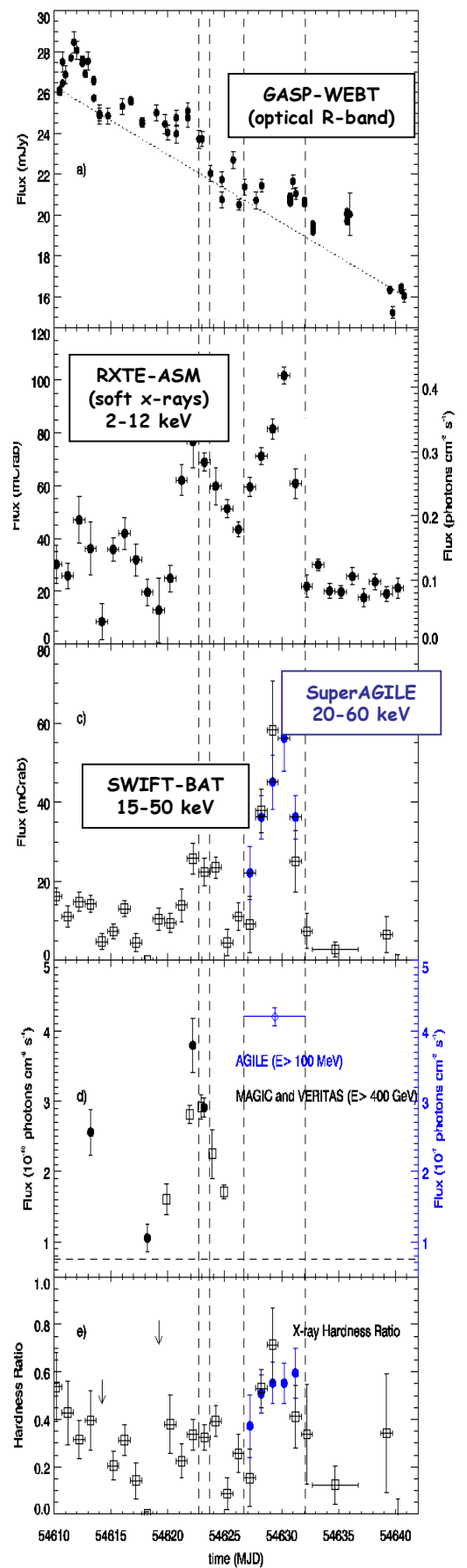
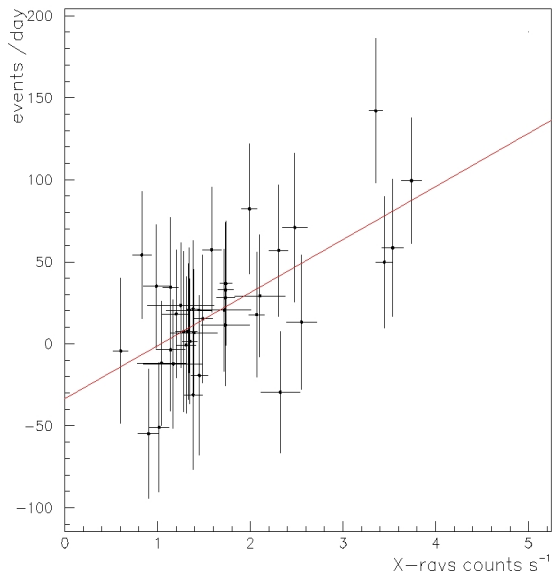
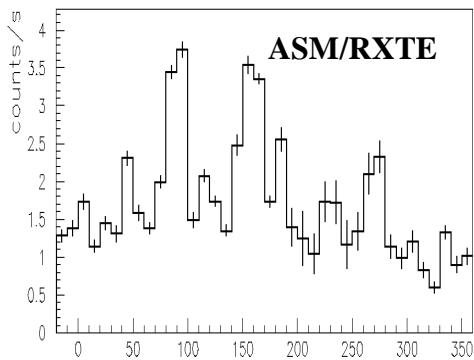
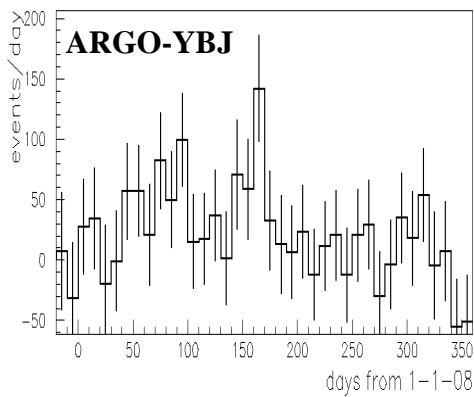


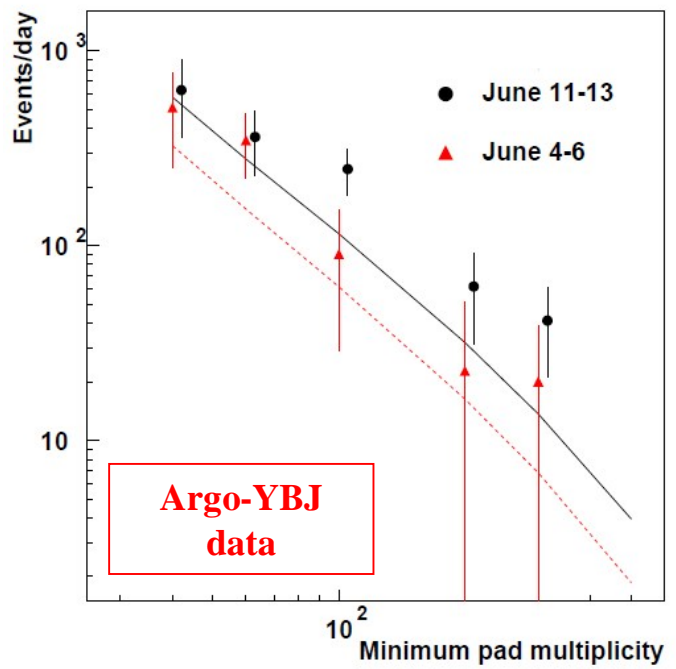
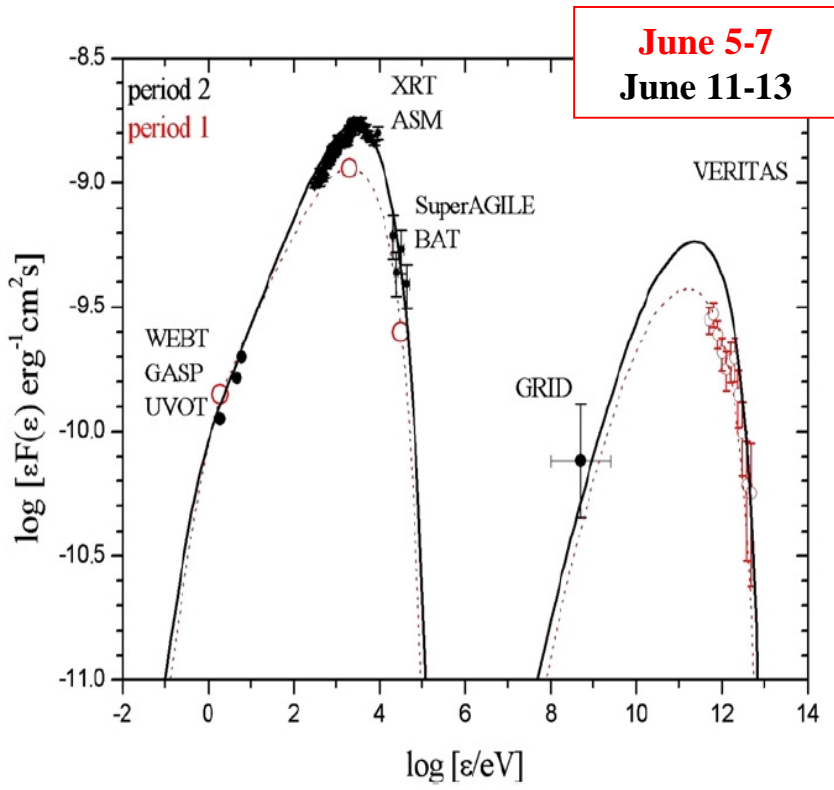


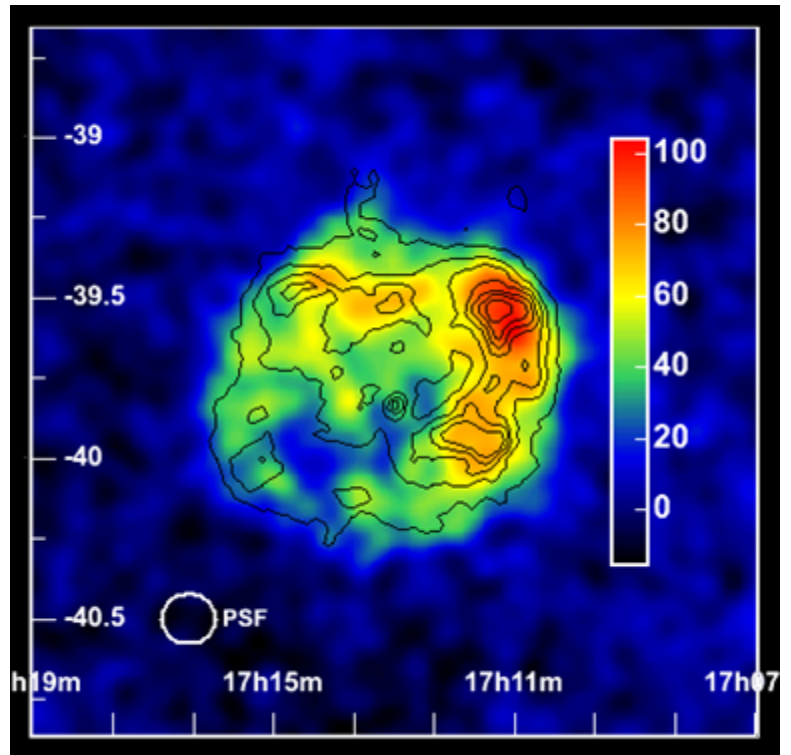
The gamma-ray sky



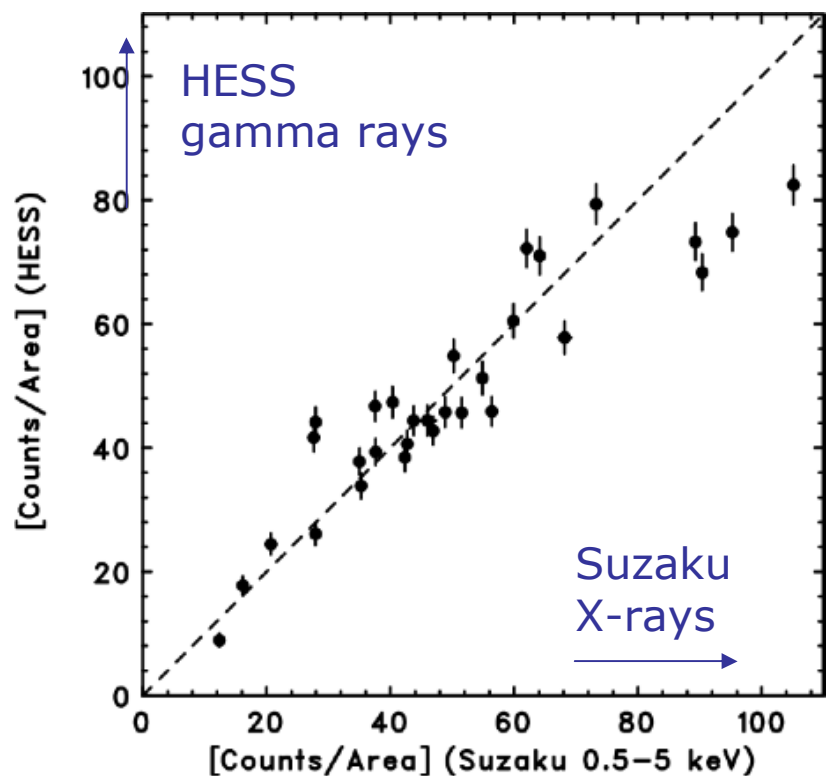


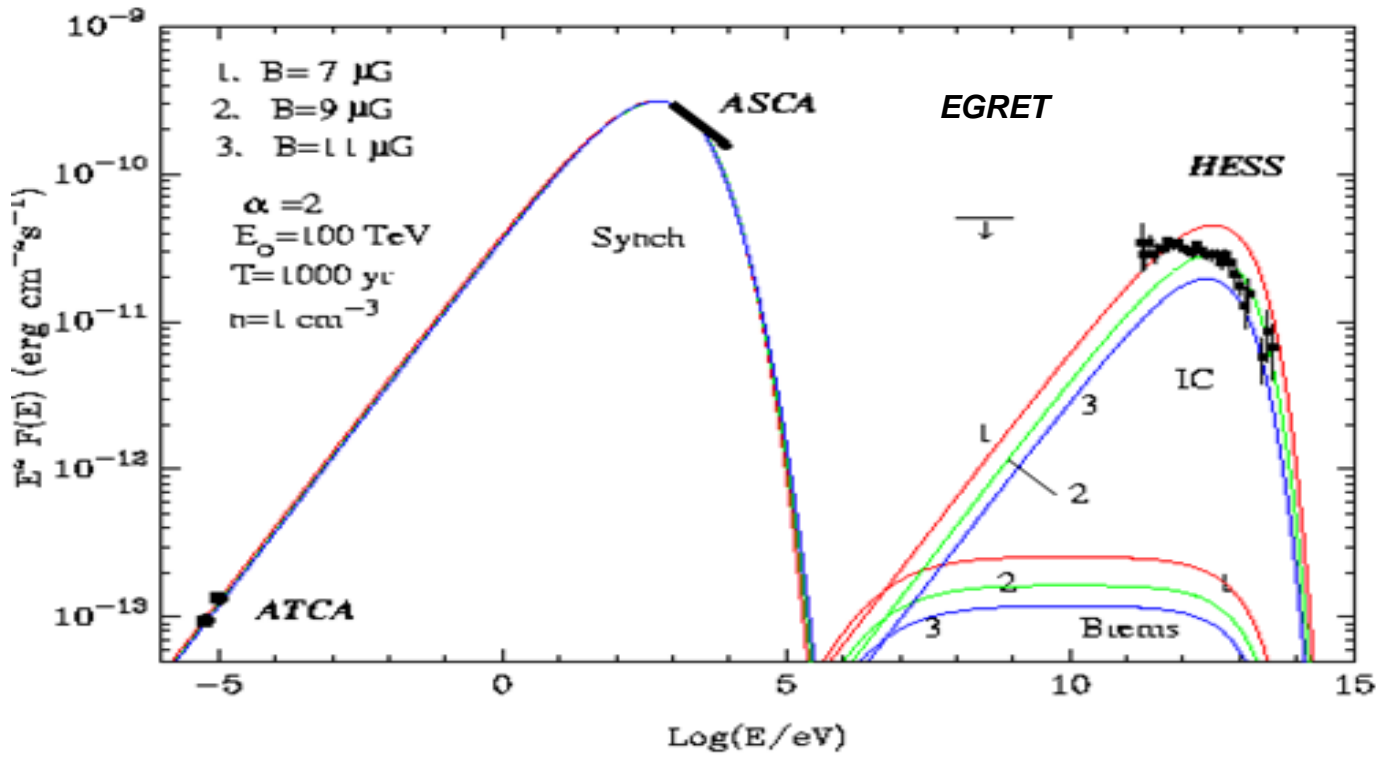




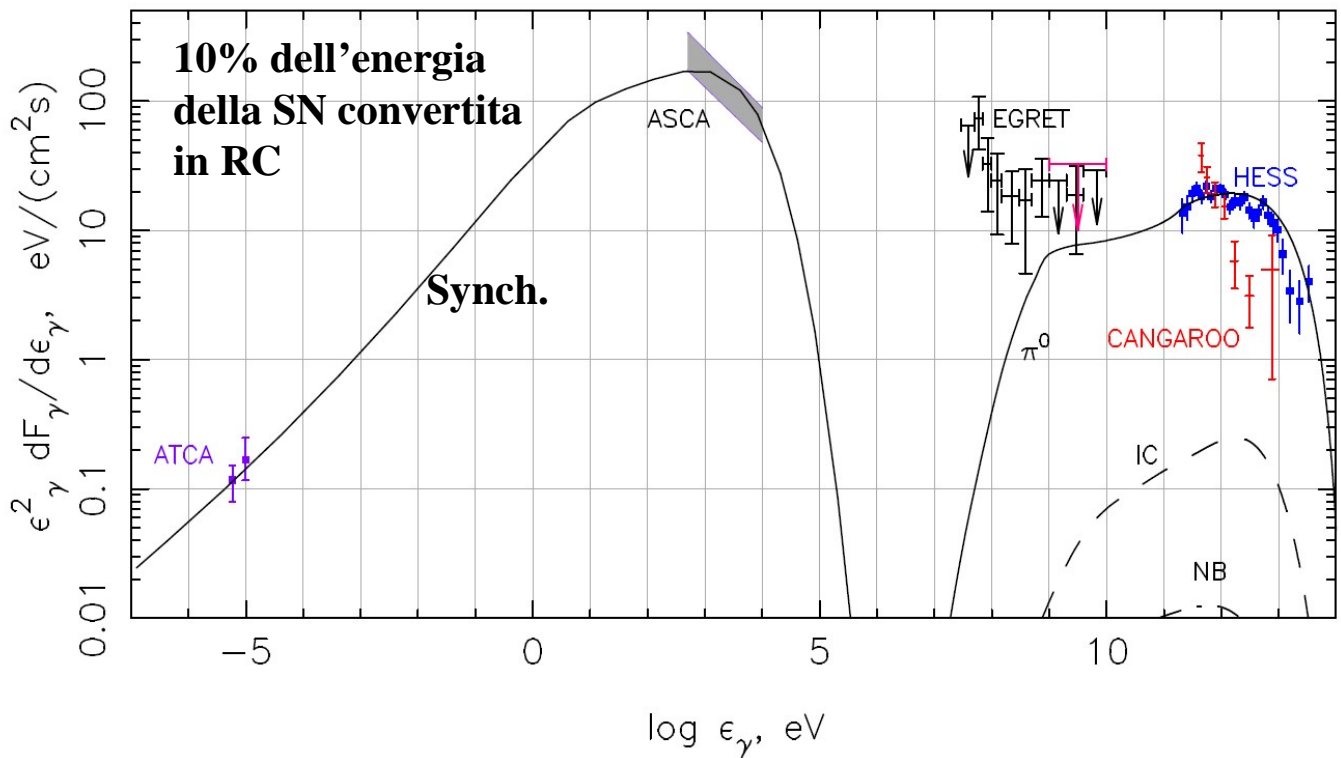


Livelli colorati (gamma)
Contorni (raggi X)





Berezkho & Völk astro/ph-0602177



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