OBSERVATION OF FAR QUASAR 1739+522 (Z=1.375) AND COMPARISION WITH OTHER METAGALACTIC SOURCES 3C454.3, MKN 501, MKN 421, NGC1275.

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The most far metagalactic source 1739+522 with red shift of z=1.375 is also most powerful. The energy spectrum of active galactic nucleus 1739+522 at range of 0.8 - 7 TeV is received, k_γ=-1.08±0.06, the integral spectra of events form source- k_{on} = -1.13±0.06 and background events, observed simultaneously with source - k_{off} =-1.77±0.07, and also source images are presented. Thus, the energy spectrum of metagalactic sources quasars Mkn421, Mkn501 at range 10^{12} - 10^{13} eV: Mkn 421 (z=0.031) k_γ=-1.53±0.41, k_{on}=-1.46±0.06, k_{off}=-1.75±0.06; Mkn 501 (z=0.034) k_γ=-1.89±0.11, k_{on}=-1.83±0.06, k_{off}=-1.72±0.06, differs from spectra of far quasars 1739+522 and 3c454.3 that don't contradict to united energy spectrum $F(>E_\gamma) \sim E_\gamma^{-1.2\pm0.1}$.

The greater place in modern physics and astrophysics is acquired by researches of galactic and metagalactic objects, where the protons and nuclei acceleration processes, accompanying with generation of not dissipated by magnetic fields of Universe gamma-quanta and neutrinos, will be realised. These researches are carried out by mirror telescope SHALON on Tien-Shan high mountainous station. Cherenkov mirror telescope SHALON created at Lebedev Physical Institute and stated at 1991-1992 at Tien-Shan mountains 3338 m high above the sea level with ~11м^2 mirror area and image matrix consisting of 144 photomultipliers with full angle of >8^o during 1992-2003 was used for observations of metagalactic sources Markarian 501, Markarian 421, NGC 1275, 3c454.3, 1739+522 (fig. 1-4) [1 - 14] and galactic sources Crab Nebula, Cygnus X-3, Tycho's SNR, Geminga, 2129+47XR.

The new metagalactic sources of gamma-quanta with energy more than 0.8 TeV - Seyfert galaxy NGC1275 with flux of (0.78±0.13)•10^{-12}cm^{-2}s^{-1}, and active galactic nuclei 3c454.3 and 1739+522 (z=0.859 and z= 1.375) with flux of (0.43±0.13)•10^{-12} cm^{-2}s^{-1}, and (0.49±0.10)•10^{-12} cm^{-2}s^{-1} accordingly are detected. (fig. 1, 2). The SHALON observation results of known gamma-source (Markarian 501, Markarian 421, Crab Nebula) are in consistent with observation data of best world telescopes Whipple, CAT (fig. 3, 4). The

Table 1. The metagalactic gamma-quanta sources catalogue, observed by SHALON; at the column Relative intensity of source the Crab Nebula intensity is accepted for ***1***

The source of gamma-quanta (E>0.8 TeV)	The observed flux cm^{-2}s^{-1}	Distance Mpc	Relative intensity of source (in Crab units)
Mkn 421	(0.63±0.14) 10^{-12}	124	3.8-10^9
Mkn 501	(0.86±0.13) 10^{-12}	135	4.6-10^9
NGC 1275	(0.78±0.13) 10^{-12}	71	1.2.10^9
3c4543	(0.43±0.13) 10^{-12}	4685	5.3-10^{12}
1739+522	(0.49±0.10) 10^{-12}	7500	1.4-10^{13}

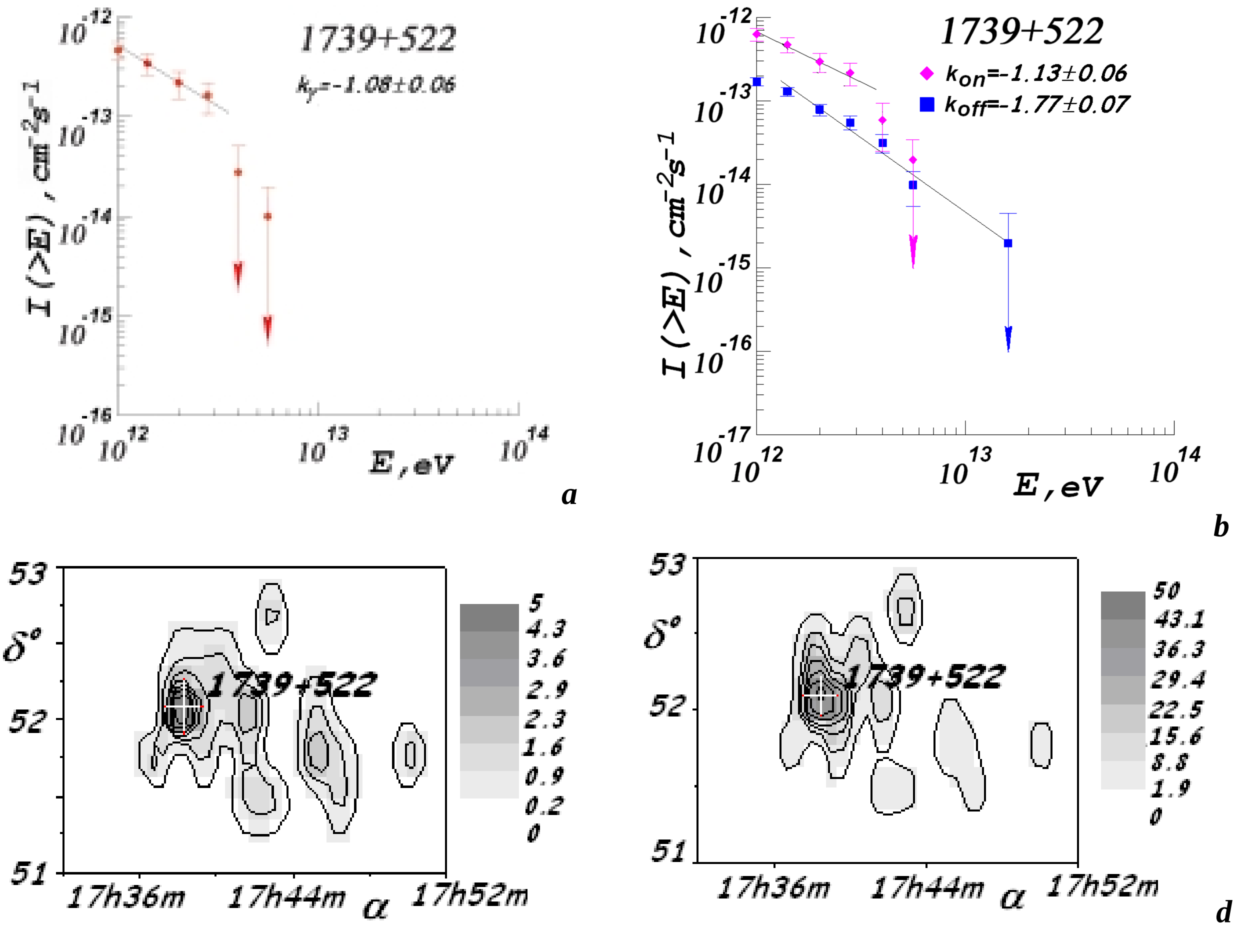


Fig. 1 a – the 1739+522 gamma-quanta integral spectrum with power index of k_γ=-1.08±0.06; b –the events spectrum from 1739+522 with background k_{on} =-1.13±0.06 and spectrum of background events observed simultaneously with 1739+522 k_{off} =-1.77±0.06; c - 1739+522 image at energy range of more then 0.8 TeV by SHALON; d – 1739+522 energy image (in TeV) by SHALON

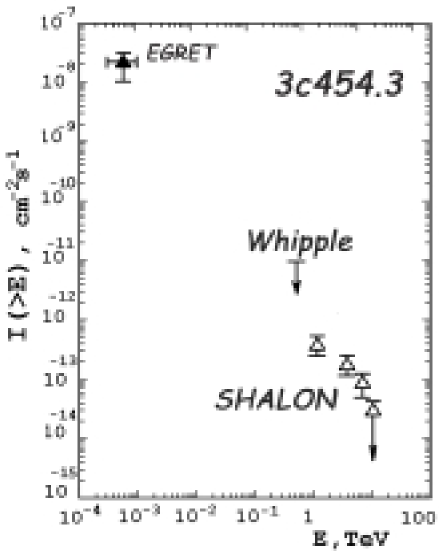


Fig. 2 - The 3c454.3 gamma-quanta (E>0.8TeV) integral spectrum by SHALON in comparison with other experiments [9 - 11]

energy spectrum agrees with the extrapolation of spectra observed using EGRET at the energy region 10^2-10^3 MeV. Crab Nebula and galaxies Markarian 421 and Markarian 501 observation results are compared with the other experiment's data including the data from space at energy region 10^8-10^{14} eV [3 - 14].

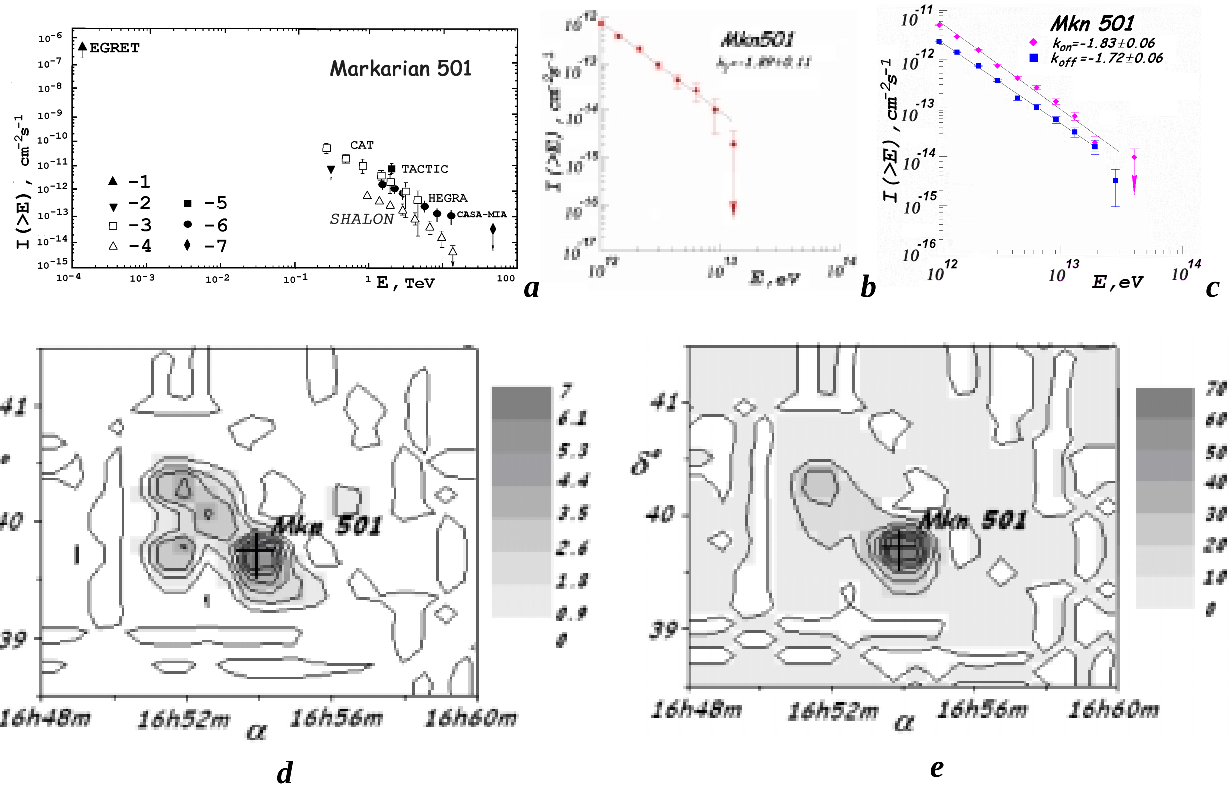
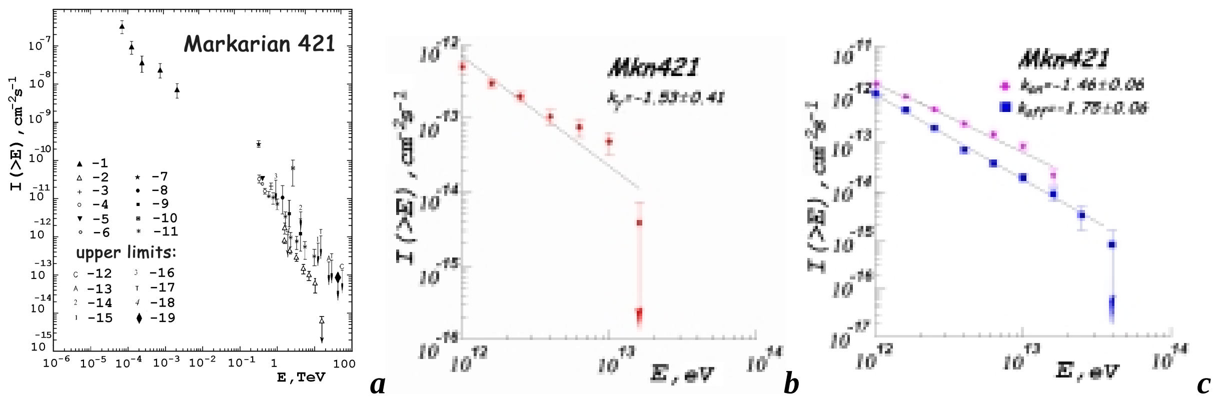


Fig. 3 a – The Mkn501 gamma-quanta (E>0.8TeV) integral spectrum by SHALON in comparison with other experiments [3 - 14] 1 - EGRET (D.J.Thompson priv.comm; Mukherjee et.al. 1997, Kataoka et.al. 1999); 2 – Whipple 1999 (Weekes et. al. Prep. Ser. N4811, 1999); 3 – CAT 97 (M. Punch et. al. 1997); 4 – SHALON 96 – 03 (Sinitsyna et. al. 2003); 5 – TACTIC 97 (Bhat et al. 1997); 6 – HEGRA CT1 96 (Petry et. al. 1997); 7 – CASA-MIA 96 – 97 (Catanese et. al. 1997); b – the gamma-quanta integral spectrum of Mkn501with power index of k_γ*=-1.89±0.11;c – the events spectrum from Mkn501 with background* k_{on} *=-1.83±0.06* ^{and} *spectrum of background events observed simultaneously with Mkn501* k_{off} *=-1.72±0.06; d - Mkn501 image at energy range of more then 0.8 TeV by SHALON; e – Mkn501 energy image (in TeV) by SHALON*

At 1999 year at SHALON observation there was a new metagalactic gamma-quanta with energies >0.8 TeV source with flux $(0.49\pm0.10)\bullet10^{-12}$ detected. This source coincides by its coordinates with the active nucleus galaxy 1739+522. The energy spectrum of active galactic nuclei 1739+522 was measured at energy interval of 0.8 to 7 TeV, k_γ=-1.08±0.06 (fig. 1a) and the source image is presented at fig. 1c,1d. On figure 1b the spectrum of events passing through distinguishing criteria with background k_{on}=-1.13±0.06 and spectrum of background events observed simultaneously with source k_{off}=-1.77±0.07 are shown in comparison. The average gamma-quanta flux at range ~30 MeV - 50 GeV on observation data of telescope EGRET of Compton observatory (CGRO) is $\sim2\bullet10^{-8}$ $cm^{-2}s^{-1}$ with integral spectrum index ~1.2 [11]. At 1998 year at SHALON observation there was also a new metagalactic gamma-quanta with energies >0.8 TeV source 3c454.3 (z=0.857) with flux $(0.43\pm0.13)\bullet10^{-12}$ $cm^{-2}s^{-1}$ detected (fig.2). The observation of this source by Whipple telescope at energy more than 0.5 TeV, puts only upper limit of flux $0.84\bullet10^{-11}cm^{-2}s^{-1}$ [9, 10]. The figure 2 also shows the observation results of 3c454.3 by EGRET at energy range ~30 MeV - 50 GeV, with index of power spectrum ~1.2 [11]. Thus, as follows from figure, the experimental data can be described by the uniform law $F(>E)\sim E^{\gamma}$ at energy range 10^8 - 10^{13}eV [4 - 14].



a *b* *c*

Fig.4. a – The Mkn421 integral gamma-quanta (E>0.8TeV) spectrum by SHALON in comparison with other experiments [2 - 14]: 1- Egret (Thompson et.al. 1993); 2 - SHALON 94-03 (Sinitsyna et.al. 2003); 3- Whipple 91-93(Schubnell et.al.1996); 4 - Whipple 94(Schubnell et.al.1996); 5 - Whipple 1995 average (McEneryl et.al.1997); 6 - Whipple 1995 average (McEneryl et.al.1997); 7 - Whipple MJD 49487 (Schubnell et. al. 1996); 8 - HEGRA CT2 95 (Petry et.al 1996); 9 - HEGRA CT1 96 (Petry et. al. 1997); 10 - Telescope Array MJD 50216 (Aiso et. al. 1997); 11 - Telescope Array (Yamamoto et. al. 1999); 12 - CYGNUS (Alexandreas et. al 1993); 13 - HEGRA (Karle et. al. 1995); 14 - HEGRA CT2 95 (Petry et.al 1996); 15 - HEGRA CT1 96 (Petry et. al. 1997); 16 - TACTIC 97 (Bhat et. al. 1997); 17 - Tibet (Amenomory et. al. 1997); 18 - CASA-MIA 96-97 (Catanese et. al. 1997) 19 - TACTIC (Bhat et. al. 1999); b — the gamma-quanta integral spectrum of Mkn421 with power index of $k_\gamma=-1.53\pm0.41$*; c – the events spectrum from Mkn421 with background* $k_{on}=-1.46\pm0.06$ *and spectrum of background events observed simultaneously with Mkn421* $k_{off}=-1.75\pm0.06$.

The most far metagalactic source 1739+522 with red shift of z=1.375 is also most powerful. The energy spectrum of active galactic nucleus 1739+522 at range of 0.8 - 7 TeV is received, $k_\gamma=-1.08\pm0.06$, the integral spectra of events form source- $k_{on} = -1.13\pm0.06$ and background events, observed simultaneously with source - $k_{off}=-1.77\pm0.07$, and also source images are presented. But the spectral distribution of emitting gamma-quanta differs from average on other known distant metagalactic sources - quasars $F(>E_0) \sim E^k$: Mkn 421 (z=0.031) $k_\gamma=-1.53\pm0.41$, $k_{on}=-1.46\pm0.06$, $k_{off}=-1.75\pm0.06$; Mkn 501 (z=0.034) $k_\gamma=-1.89\pm0.11$, $k_{on}=-1.83\pm0.06$, $k_{off}=-1.72\pm0.06$. Thus, the energy spectrum of metagalactic sources quasars Mkn421, Mkn501 at range 10^{12} - 10^{13} eV, differs from spectra of far quasars 1739+522 and 3c454.3 that don't contradict to united energy spectrum $F(>E_\gamma) \sim E_\gamma^{-1.2\pm0.1}$.

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OBSERVED AND EXPECTED 1-30TEV GAMMA-RAY EMISSION FROM GEMINGA AND TYCHO'S SUPERNOVA REMNANTS

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The gamma-quanta emitting objects in our Galaxy are the supernova remnants and binary. The observation results of gamma-quanta sources Tycho Brage and Geminga by SHALON gamma-telescope are presented. The integral spectra of events from source - k_{on} and background events, observing simultaneously with source's events - k_{off}, and source image are presented. The energy spectra of supernova remnants Tycho's SNR and Geminga $F(E_0>0.8$TэВ$) \sim E^k$ are softer than Crab Nebula spectrum. The Tycho's SNR has long been considered as a candidate of cosmic ray hadrons source in Northern Hemisphere. A nonlinear kinetic model of cosmic ray acceleration in supernova remnants was used to Tycho's SNR (Völk, Berezhcko, et all., Proc. 27th ICRC, 2001, p. 2469). The expected π^0 -decay gamma-quanta flux $F_\gamma \sim E_\gamma^{-1}$ extends up to $\geq$30TeV, whereas the Inverse Compton gamma-ray flux has a cutoff above the few TeV. So, the detection of gamma-rays at energies of ~ 30 TeV would the evidence of hadron origin.

Tycho Brage supernova remnant has been observed by SHALON atmospheric Cherenkov telescope of Tien-Shan high-mountain observatory. This object has long been considered as a candidate to cosmic ray hadrons source in Northern Hemisphere, although it seemed that the sensitivity of the present generation of Imaging Atmospheric Cherenkov System's too small (sufficient) for Tycho's detection. The observations on Tien-Shan high-mountain station by SHALON were carried out since 1992 year [1-4]. During this period 12 metagalactic and galactic sources were observed. Among them are galactic sources Crab Nebula (supernova remnant), Cygnus X-3 (binary), Tycho's SNR (supernova remnant), Geminga (radioweak pulsar) and 2129+47 (binary) (Table 1). For the each source the results of observation data analysis are integral spectra of events coming from source - k_{on}, and background events, coming simultaneously with source observation - k_{off}, time analysis of events from source and background ones, observed simultaneously and the source images. At table 1 and figures 1-5 the observation results of Galaxy gamma-sources are showed. The SHALON observation results of known gamma-source Crab Nebula are in consistent with observation data of best world telescopes (fig. 1). The inaccuracy (error) of gamma-quanta flux from Crab Nebula is overestimated, as it includes the difference of observation results at energy range of 10^{12} - 10^{14} eV using gamma-telescopes and space observations results at energy range of 10^8 - 10^{10} eV. Such difference can also be connected with the difference of gamma-quanta generation processes at 10^{12} - 10^{14} eV and X-ray energy range.

Table 1. The SHALON catalogue of galactic sources.

The galactic sources of gamma-quanta with energy >0.8TeV	Flux, $cm^{-2}s^{-1}$	Distance, kpc
Crab Nebula	$(1.12\pm0.08)10^{-12}$	2.0
Cygnus X-3	$(0.68\pm0.07)10^{-12}$	10
Geminga	$(0.48\pm0.17)10^{-12}$	0.25
Tycho's SNR	$(0.52\pm0.09)10^{-12}$	2.3
2129+47XR	$(0.19\pm0.09)10^{-12}$	6.0

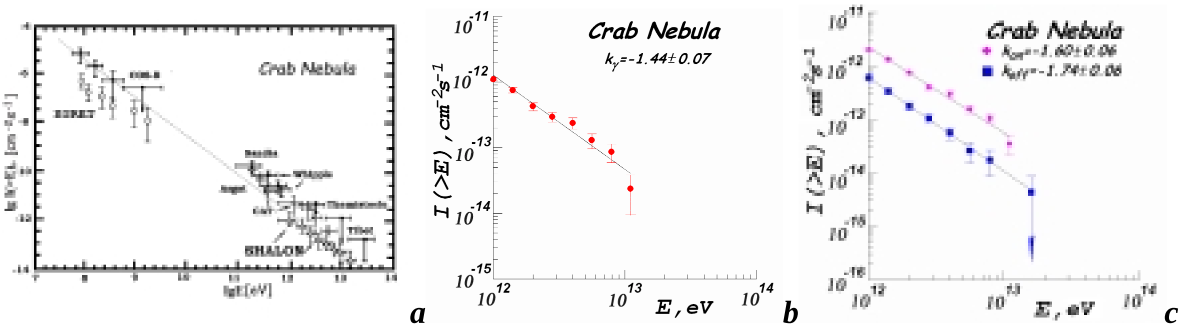

Fig. 1 a - The Crab Nebula gamma-quanta integral spectrum by SHALON in comparison with other experiments; b – the Crab Nebula spectrum $dF/dE_\gamma \sim E_\gamma^{-2.44\pm0.07}$; c – the spectrum of events from Crab Nebula, including 10-15% contribution of background events $dF/dE \sim E^{-2.6\pm0.06}$, the spectrum of background events observed simultaneously with source $dF/dE \sim E^{-2.74\pm0.06}$.

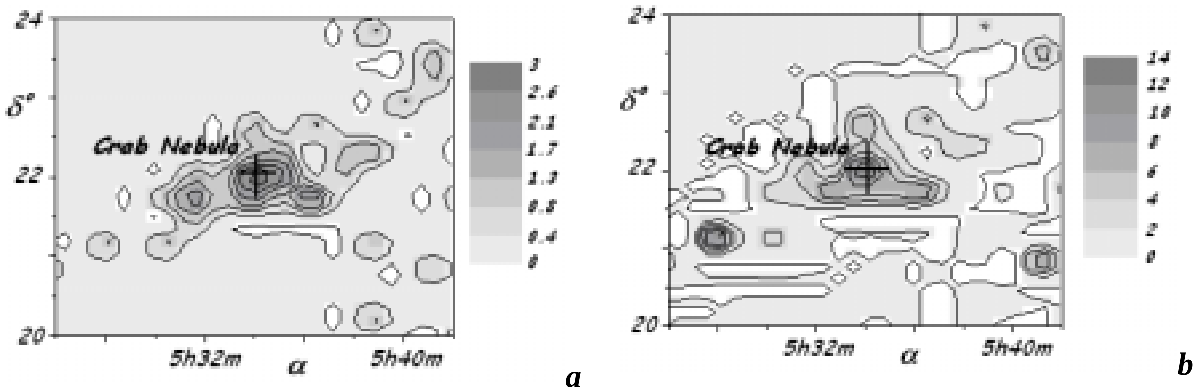

Fig. 2 a -The image of Crab Nebula at E >0.8 TeV by SHALON; b -Crab Nebula energy image

In table 2 the spectra indexes for Crab Nebula on atmospheric Cherenkov telescopes Whipple, SHALON, CANGAROO, CAT, HEGRA are presented. [5].

The figures 3-5 shown the observation results on Tycho's SNR and Geminga and gamma-quanta from proton distinguishing criteria. Selection of showers produced by gamma-quanta from background produced by protons is made according to the following criteria: 1) $\alpha<20^o$; 2) length/width>1/6; 3) int0>0.6; 4) int1> 0.8; 5) distance<3.5 (fig.1 this issue)

Table 2. The Crab Nebula flux.

Group	VHE Spectrum (10^{-11} photons $cm^{-2}s^{-1}TeV^{-1}$)	E_{th} TeV
Whipple (1991)	$(25(E/0.4TeV))^{-2.4\pm0.3}$	0.4
Whipple (1998)	$(3.2\pm0.7)(E/TeV)^{-2.49\pm0.06_{stat}\pm0.04_{syst}}$	0.3
SHALON (2003)	$(1.7\pm0.26)\cdot10^{-1}(E/TeV)^{-2.44\pm0.07}$	0.8
CANGAROO (1998)	$(2.01\pm0.36)\cdot10^{-2}(E/7TeV)^{-2.53\pm0.18}$	7
CAT (1999)	$(2.7\pm0.17\pm0.40)(E/TeV)^{-2.57\pm0.14_{stat}\pm0.08_{syst}}$	0.25
HEGRA (1999)	$(2.7\pm0.2\pm0.8)(E/TeV)^{-2.60\pm0.05_{stat}\pm0.05_{syst}}$	0.5
Tibet HD (1999)	$(4.61\pm0.90\cdot10^{-1})(E/3TeV)^{-2.62\pm0.17}$	3

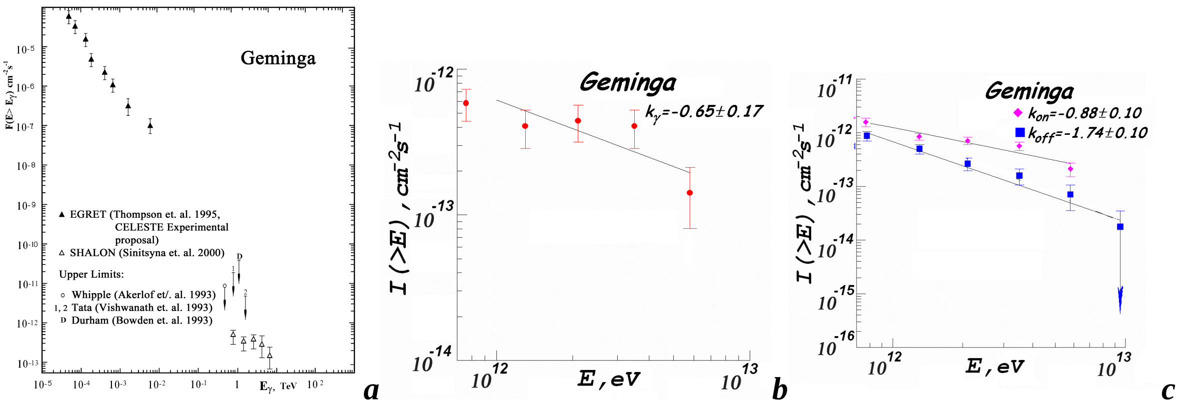

Fig. 3. a - The Geminga gamma-quanta integra spectrum by SHALON in comparison with other experiments; b – the Geminga spectrum $dF/dE_\gamma \sim E_\gamma^{-1.65\pm0.17}$; c – the spectrum of events from Geminga, including 10-15% contribution of background events $dF/dE \sim E^{-1.88\pm0.10}$, the spectrum of background events observed simultaneously with source $dF/dE \sim E^{-2.77\pm0.10}$..

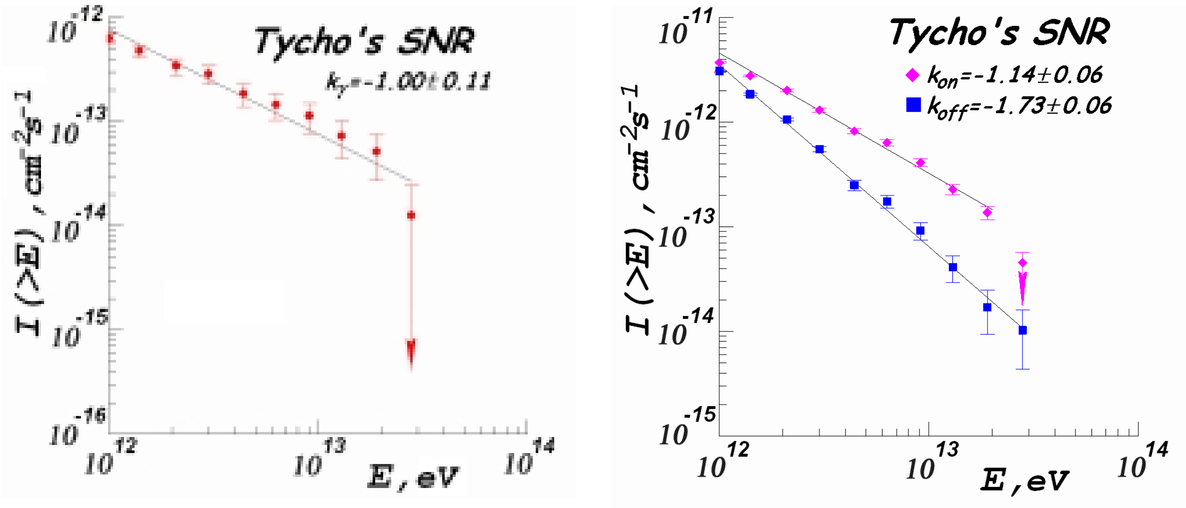

Fig. 4. The Tycho's SNR integral gamma-quanta spectrum by SHALON. left – the Tycho's SNR a spectrum $dF/dE_\gamma \sim E_\gamma^{-2.00\pm0.11}$; right – the spectrum of events from Tycho's SNR, including 10-15% contribution of background events $dF/dE \sim E^{-2.14\pm0.06}$, the spectrum of background events observed simultaneously with source $dF/dE \sim E^{-2.73\pm0.06}$

The average fluxes is: I_{Tycho}= (5.1± 0.9)•10^{-13} cm^{-2}s^{-1} и $I_{Geminga}$ =(4.8±1.7)•10^{-13} cm^{-2}s^{-1} (fig. 3, 4). The integral spectra of events from source - k_{on} and background events, observing simultaneously with source's events - k_{off} are presented (fig. 3, 4). The energy spectra of supernova remnants Tycho's SNR and Geminga $F(E_0>0.8TэB) \sim E^k$ are softer than Crab Nebula spectrum:

Tycho's SNR	k_γ=-1.00±0.11, k_{on}=-1.14±0.06, k_{off}=-1.73±0.06
Geminga	k_γ=-0.65±0.17, k_{on}=-0.88±0.10, k_{off}=-1.77±0.10
Crab Nebula	k_γ=-1.44±0.07, k_{on}=-1.60±0.06, k_{off}=-1.74±0.06

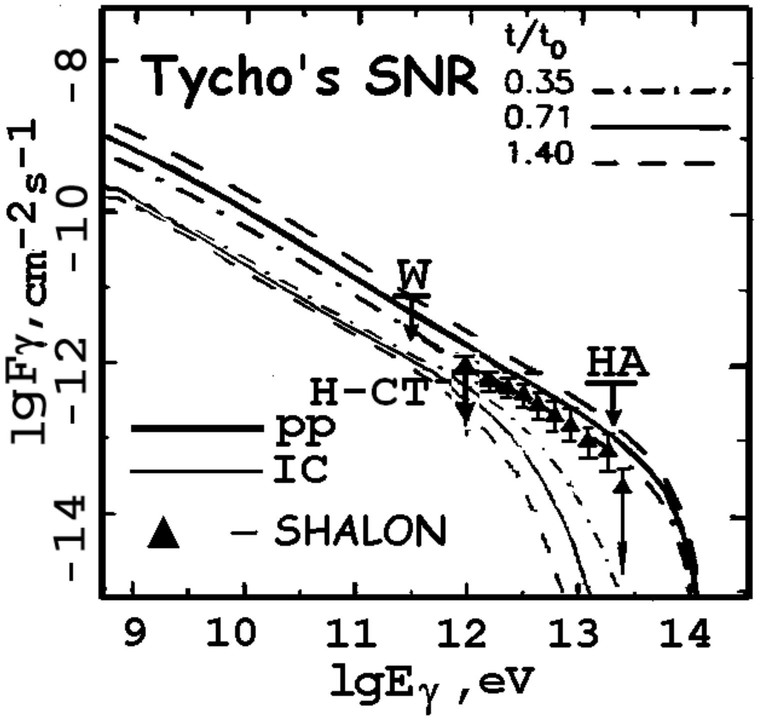

Fig 5. The Tycho's SNR gamma-quanta integral spectrum by SHALON in comparison with other experiments: the observed upper limits W -- Whipple, H-CT -- HEGRA IACT- system, HA -- HEGRA AIROBICC and calculations [Berezhko, Volk]

A nonlinear kinetic model of cosmic ray acceleration in supernova remnants is used in [6], fig. 5 to describe the properties of Tycho's SNR. The kinetic nonlinear model for cosmic ray acceleration in SNR has been applied to Tycho's SNR in order to compare model results with recently found very low observational upper limits on TeV energy range. In fact, HEGRA didn't detect Tycho's SNR, but it could establish very low upper limit at energies >1TeV. This value is consistent with, but a factor of 4 lower than that previously published by Whipple collaboration, assuming the spectral index of -1.1 for comparison [6]. The π^0 -decay gamma-quanta flux turns out to be some greater than inverse Compton flux at 1 TeV, dominating it strongly at 10 TeV. The predicted gamma-quanta flux is in consistent with upper limits published by Whipple [8, 9] and HEGRA [7].

The expected π^0 -decay gamma-quanta flux $F_\gamma \sim E_\gamma^{-1}$ extends up to $\geq$30TeV, whereas the Inverse Compton gamma-ray flux has a cutoff above the few TeV. So, the detection of gamma-rays at energies of ~10 - 30 TeV by SHALON would the evidence of hadron origin [6].

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ENERGY SPECTRUM OF VERY HIGH ENERGY GAMMA-QUANTA FROM CYGNUS X-3 IN 2003 YEAR

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The observation results of point source Cygnus X-3 by mirror Cherenkov telescope SHALON (3338m up sea level) are presented. The galactic source Cygnus X-3, known more than 10 years as a source with variable intensity $\leq 10^{-11}$- $5 \bullet 10^{-12} cm^{-2}s^{-1}$, was regularly observed since a 1995 with average gamma-quanta flux $F(E_O>0,8$ TeV$)=(6.8\pm0.7) \bullet 10^{-13} cm^{-2}s^{-1}$. The flux of 2003 year is $(1.79\pm0.33)\cdot10^{-12} cm^{-2}s^{-1}$. Earlier, in 1997, increase of flux was also observed $(1.2\pm0.5)\cdot10^{-12} cm^{-2}s^{-1}$. Thus, among ten observable gamma-quanta objects, there is galactic source Cygnus X-3, with periodic change of intensity. The variability of radiation can give the essential information of a source nature.

Cherenkov mirror telescope SHALON created at Lebedev Physical Institute and stated at 1991-1992 at Tien-Shan mountains 3338 m high above the sea level with ~11м^2 mirror area and image matrix consisting of 144 photomultipliers with full angle of >8^o during 1992-2003 was used for observations of galactic and metagalactic sources at energy range of 1-65TeV [1 - 21]. The SHALON telescopes feature is large full angle that enlarges the observation area, increases the statistical accuracy and allows to control the background of EAS, generated by protons and cosmic ray nuclei, during observation. The SHALON mirror telescopic system consists of composed mirror with area of 11.2 m^2. It is equipped with 144 photomultipliers lightreciever with 0.6^o angular resolution, that has the most in the world angular size more than >8^o. It allows to control the background of cosmic ray particle emission and the atmospheric transparency simultaneously with observation that means the increasing of observation efficiency.

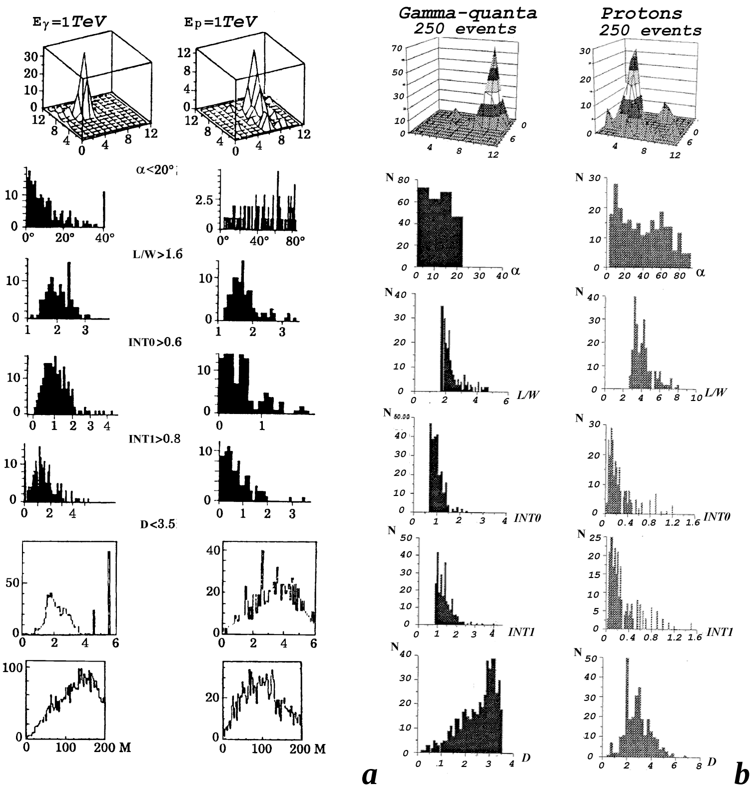


Fig. 1 a - Monte Carlo distribution of image parameters for gamma-quanta and proton showers of 1 TeV and b - experimental SHALON distribution of image parameters for gamma-quanta and proton showers with energy more than 0.8 TeV.

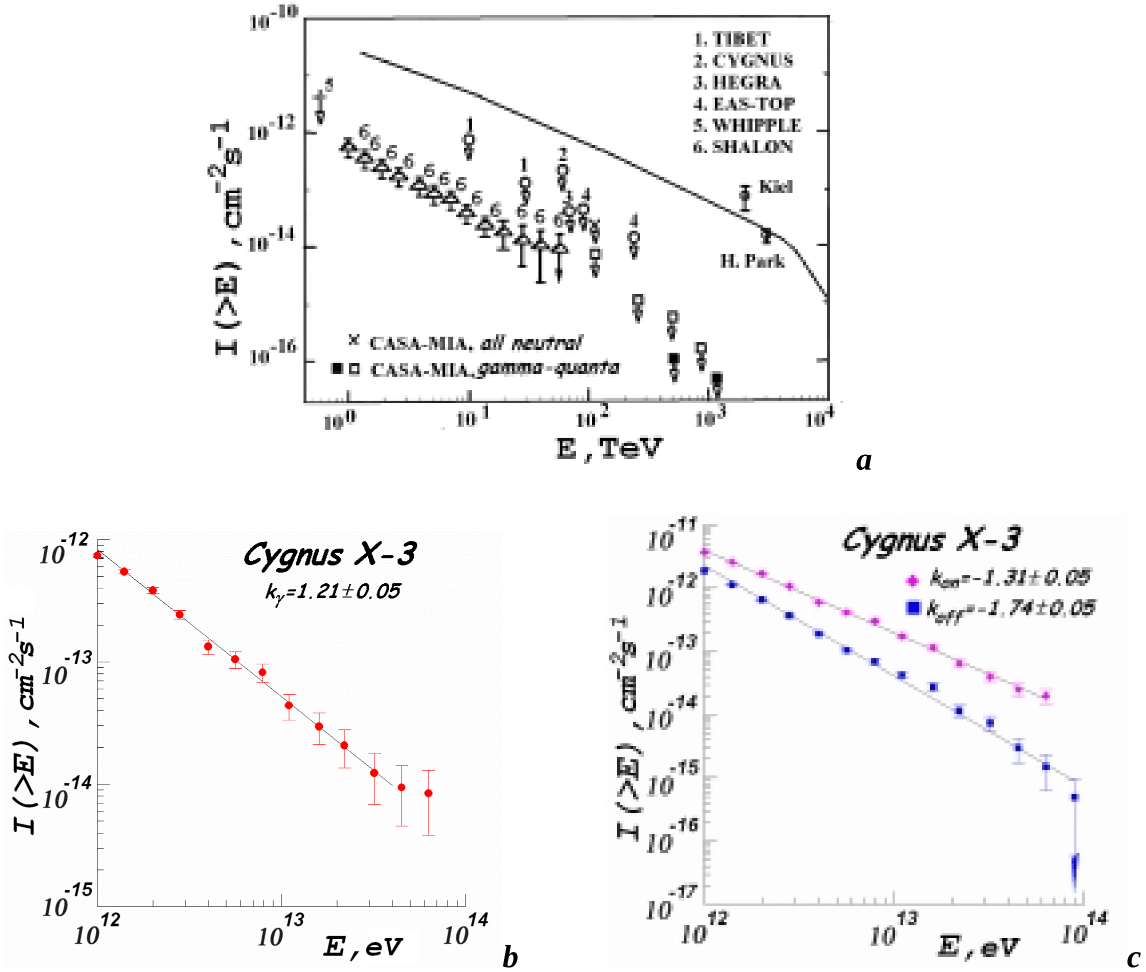
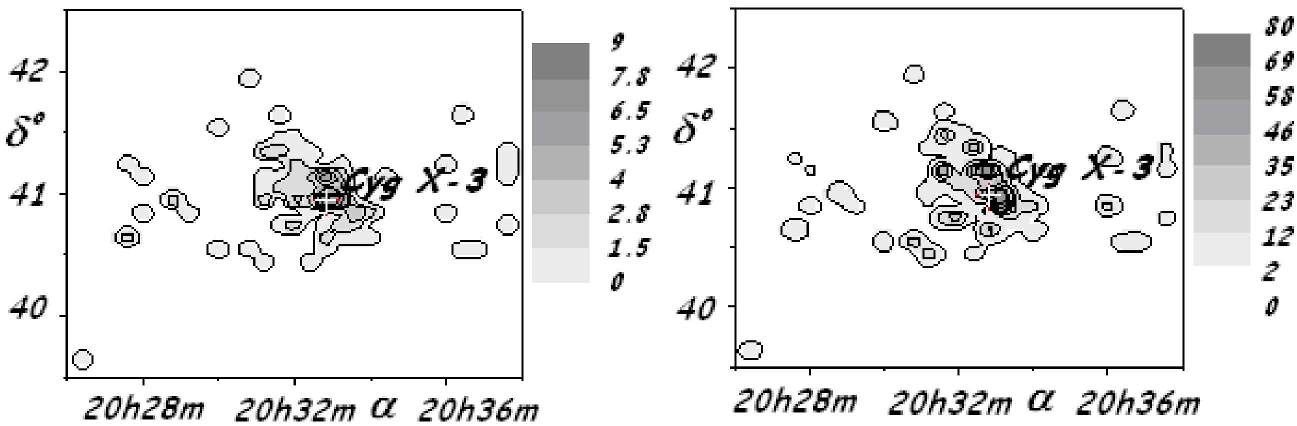


Fig. 2 a - The Cygnus X-3 gamma-quanta (E>0.8TeV) integral spectrum by SHALON in comparison with other experiments: 1-TIBET [7], 2- CYGNUS [8, 9], 3 - HEGRA [10], 4 - EAS-TOP [11, 12], 5 - Whipple [13, 14], 6 - SHALON, CASA-MIA [15], the solid line is the theoretical calculation (Hillas) [4, 5]; b – gamma-quanta spectrum of Cygnus X-3 with power index of k_γ *=-1.21±0.05; c –the events spectrum from Cygnus X-3 with background* k_{on} *=-1.31±0.05 and spectrum of background events observed simultaneously with Cygnus X-3* k_{off} *=-1.74±0.05.*



a ***b***

Fig.3 a – Cygnus X-3 image at energy range of more then 0.8 TeV by SHALON; b – Cygnus X-3 energy image (in TeV) by SHALON

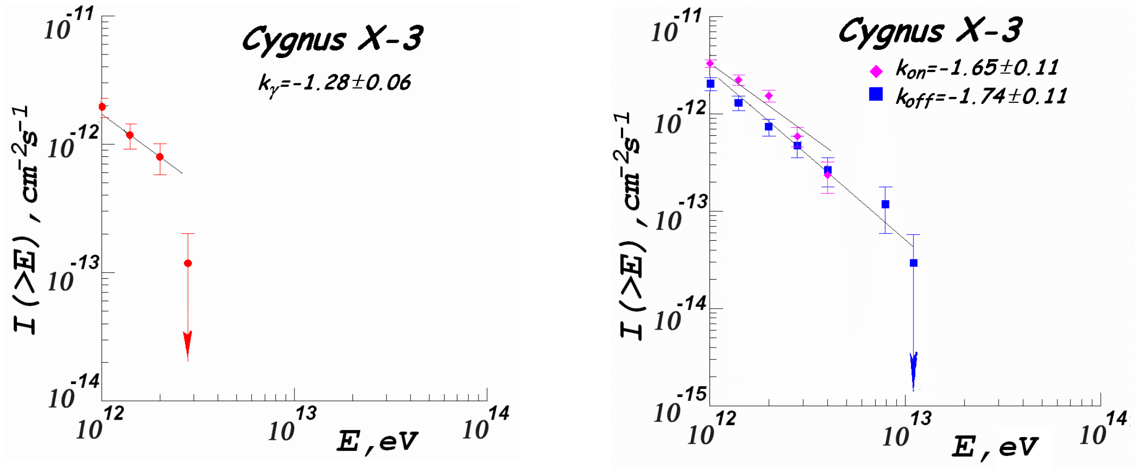
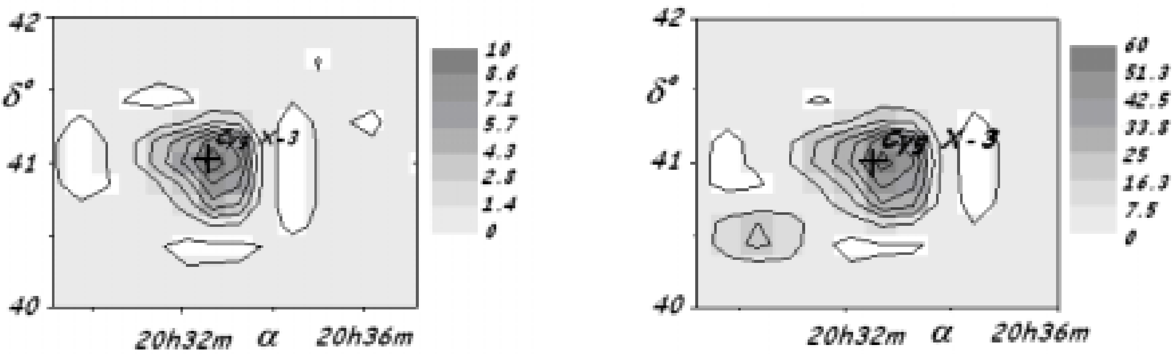


Fig. 4. left – gamma-quanta spectrum of Cygnus X-3 in 2003 year $dF/dE_\gamma \sim E_\gamma^{2.28\pm0.08}$; right – the events spectrum from Cygnus X-3 with background $dF/dE \sim E^{-2.65\pm0.10}$ and spectrum of background events observed simultaneously with Cygnus X-3 $dF/dE \sim E^{-2.74\pm0.11}$.



a **b**

Fig. 5. a – Cygnus X-3 image at energy range of more then 0.8 TeV by SHALON; b – Cygnus X-3 energy image (in TeV) by SHALON.

Selection of showers produced by gamma-quanta from a background of showers produced by protons is made according to the following point (fig 1a) 1) $\alpha<20°$; 2) length/width >1.6; 3) relation of Cherenkov light intensity in pixel with max light to the light in the eight pixels around it is INT0>0.6; 4) relation of Cherenkov light intensity in pixel with max light to the light in the all pixels except nine in the center is for INT1>0.8; 5) distance is < 3.5 pixels (distance between the pixel corresponding to the on-source direction and the most bright pixel). On fig. 1b also presented the experimental distribution of image parameters for gamma-quanta from local sources and for protons of cosmic rays, obtained during SHALON telescope observations. On the left – gamma-quanta (250) from local sources SHALON observations are represented. On the right – cosmic rays protons (250) from vertical EAS SHALON observations. From fig.1a of used in SHALON experiment gamma-quanta and proton with energy 1 TeV image-parameters Monte-Carlo simulations and fig.1b of experimental gamma-quanta from local sources and cosmic rays protons image-parameters distributions observed by SHALON telescope one can see that selection criteria used in SHALON-1 experiment extracts gamma-quanta from the proton background which confirms correctness of chosen in SHALON experiment gamma-quanta selection criteria.

On the figures 2-5 the observation results of point source Cygnus X-3 by mirror Cherenkov telescope SHALON are presented. The galactic source Cygnus X-3, known more than 10 years as a source with variable intensity $\le 10^{-11}$- $5\bullet10^{-12} cm^{-2}s^{-1}$, was regularly observed since a 1995 with average gamma-quanta flux $F(E_O>0{,}8\ TeV)=(6.8\pm0.7)\bullet10^{-13} cm^{-2}s^{-1}$. For each source the results of observation data processing are integral spectra, time analysis of the events, coming from source and background events, received simultaneously with observation of source, and source image. The energy spectrum of Cygnus X-3 at 0.8 - 65 TeV $F(>E_0) \sim E^{k\gamma}$, where k_γ=-1.21±0.05 is received for the first time with flux on the order the less than upper limits published before. The spectrum of events passing through distinguishing criteria with background k_{on}=-1.31±0.05 and spectrum of background events observed simultaneously with source k_{off}=-1.74±0.05 are shown in comparison. The temporary analysis of events received by telescope SHALON has shown, that the Off events is no more than 10 - 15% of ON events, that means contribution of less than 10-15% protons to observed gamma-quanta with energy >0.8TeV from point sources. The flux of 2003 year is $(1.79\pm0.33)\cdot10^{-12}cm^{-2}s^{-1}$. The indexes of integral spectra are k_γ=-1.28±0.06, k_{on}=-1.65±0.11, k_{off}=-1.74±0.11, accordingly. Earlier, in 1997, increase of flux was also observed $(1.2\pm0.5)\cdot10^{-12}cm^{-2}s^{-1}$. Thus, among ten observable gamma-quanta objects, there is galactic source Cygnus X-3, with periodic change of intensity. The variability of radiation can give the essential information of a source nature.

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