MOSCOW LOMONOSOV UNIVERSITY

SAI MSU, **Extreme Universe Laboratory**,

SINP MSU, Ural Federal University, Irkutsk State University, Blagoveschensk Educational State University,,

Instituto de Ciencias Astronomicas, de la Tierra y del Espacio (ICATE), Observatorio Astronomico Felix Aguilar (OAFA) , National University of San Juan

GLOBAL MASTER NET

E.S. Gorbovskoy behalf MASTER team

http://observ.pereplet.ru

Moscow Lomonosov State University, Sternberg Astronomical Institute,

V. Lipunov, E. Gorbovskoy, V.Kornilov, D.Kuvshinov, A.Belinski, N.Tyurina, N.Shatskiy, P.Balanutsa, D.Zimnukhov, A.Kuznetsov, V.V.Chazov, A.Kuznetsov, A.Sankovich

Irkutsk State University
K.Ivanov, S.Yazev, N.M.Budnev, O.Gres, O.Chuvalaev, V.A.Poleshchuk

Solar Station of the Pulkovo Observatory

A. Tlatov, A.V. Parhomenko, D. Dormidontov, V.Sennik

Ural Federal University
V.Krushinski, I.Zalozhnich, A. Popov, A. Bourdanov, A. Punanova

Blagoveschensk Educational State University, Blagoveschensk

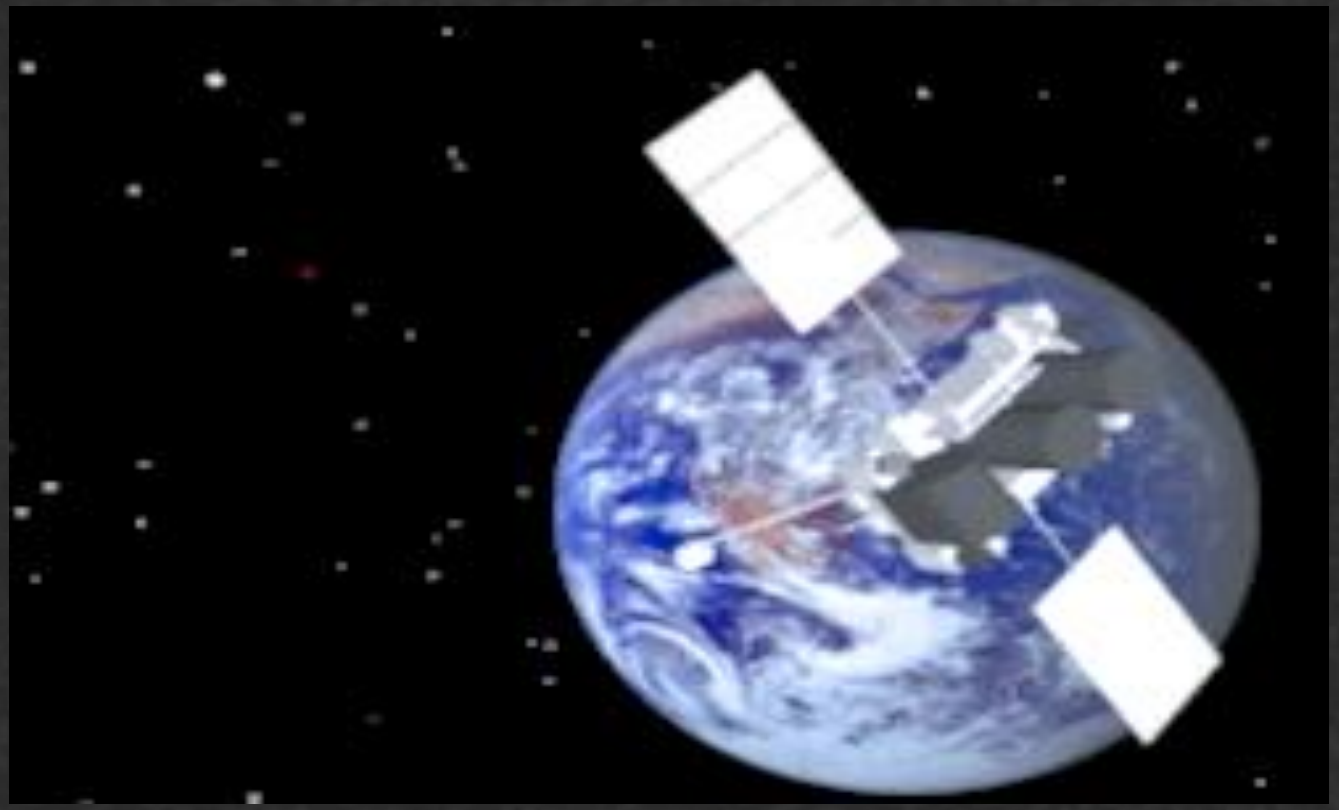
V.Yurkov, Yu.Sergienko, D.Varda, E.Sinyakov

Volunteers
S. Shurpakov, V.Shumkov, P.Podvorotniy

Instituto de Ciencias Astronomicas, de la Tierra y del Espacio (ICATE), Argentina
Hugo Levato and Carlos Saffe

Observatorio Astronomico Felix Aguilar (OAFA), Argentina
Claudio Mallamaci, Carlos Lopez and Federico Podest

Gamma Ray Bursts

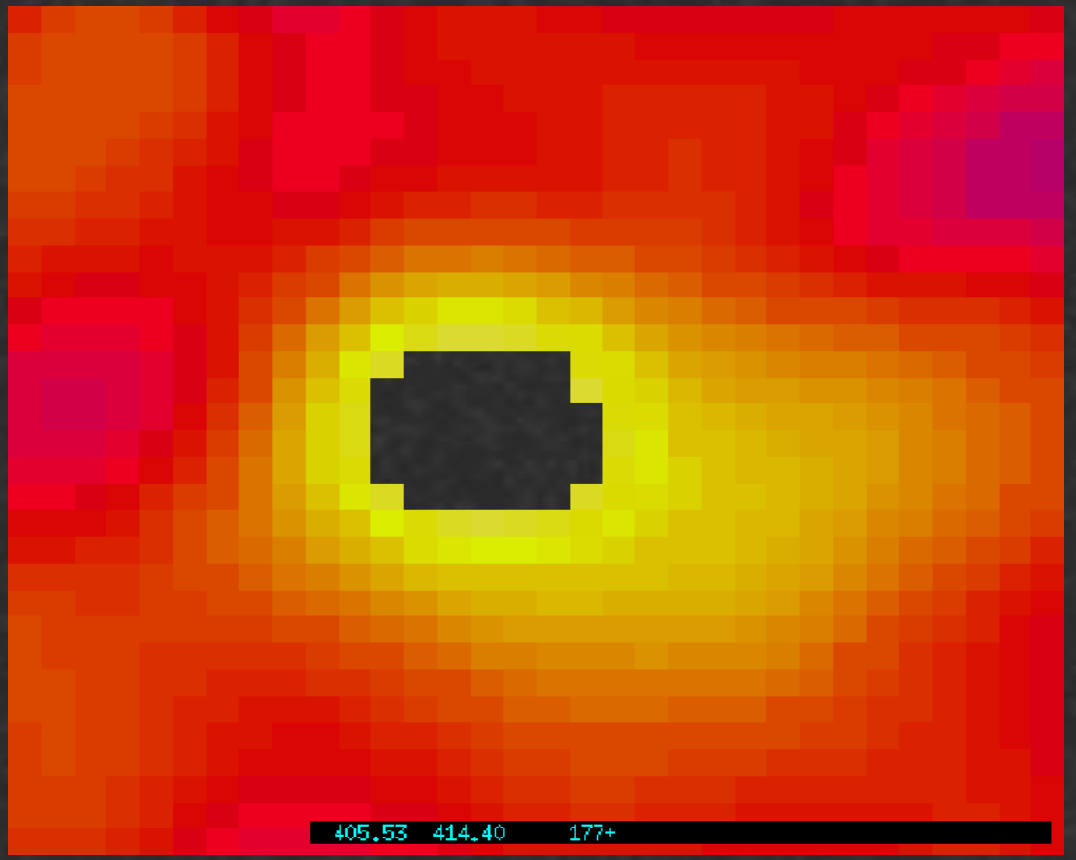


BeppoSAX

SAX - Satelito di Astronomica X

Afterglow
GRB970228

Hubble Telescope Image (1997)



1997:
Spectral line discovery

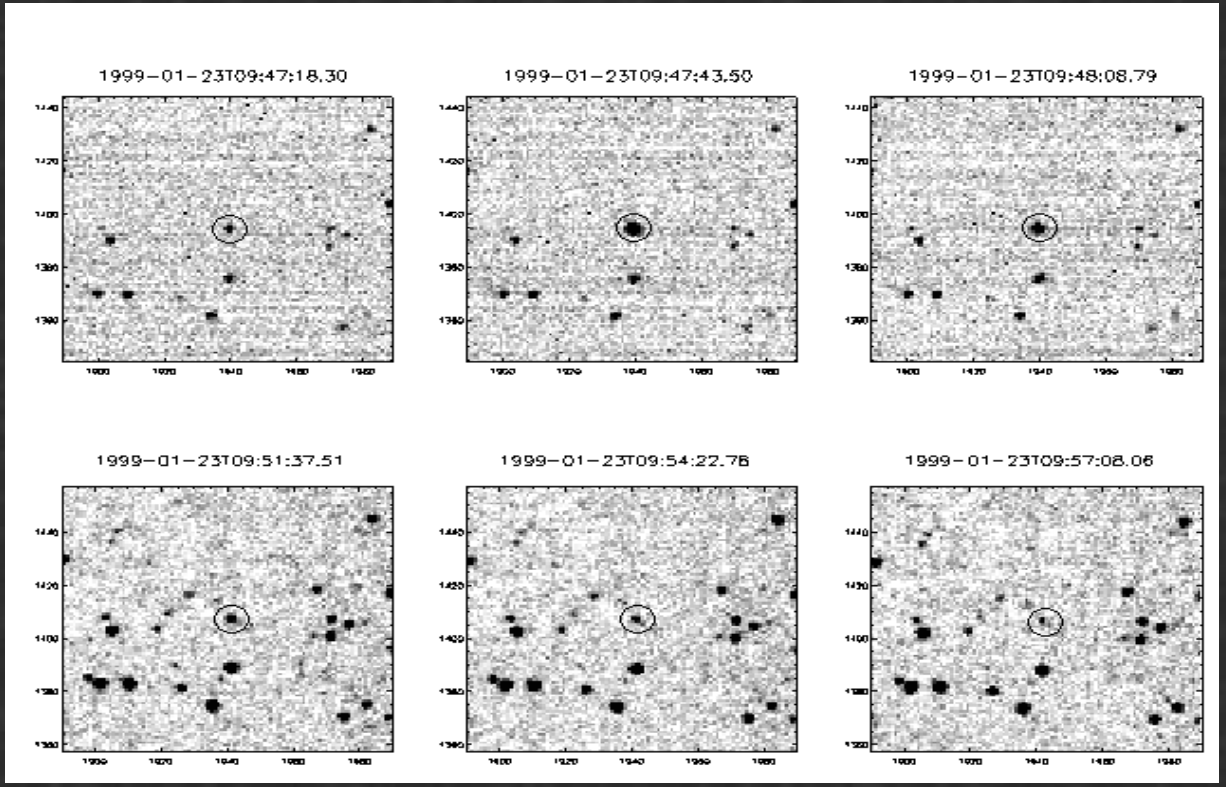
GRB970508

GRBs – cosmological!

Prompt Optical Very Bright Emission Discovery

GRB 990123

ROTSE I Akerlof et al. 1999



Energy

$E \sim 10^{51\text{-}53}$ erg

Typical collapse

$E \sim 0.1\ Mc^2$, $M \sim 1\text{-}10\ M_{solar}$

NS merging (Blinikov et al., 1983)

Collapse (Pachinsky, 1986, Astrophys. J. 308, L43-L46)

DURATION

$\Delta t_{obs} \sim 0.1 - 100$ s

Typical collapse time

$\Delta t \sim R_g/c \sim 10^{-5}$ s $<<$ Δt_{obs}

Common (more or less) opinion

Short GRB

NS+NS, NS+BH merging

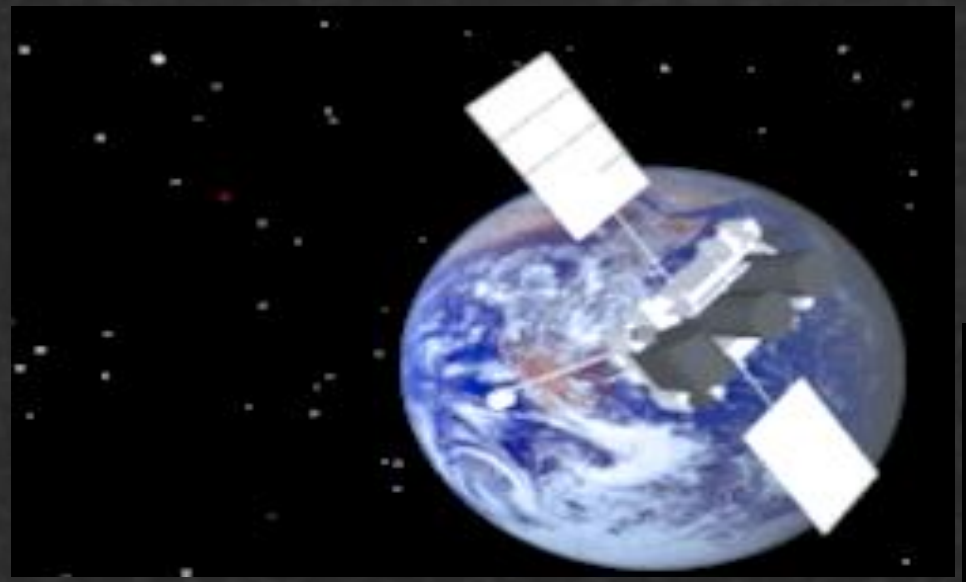
Long GRB

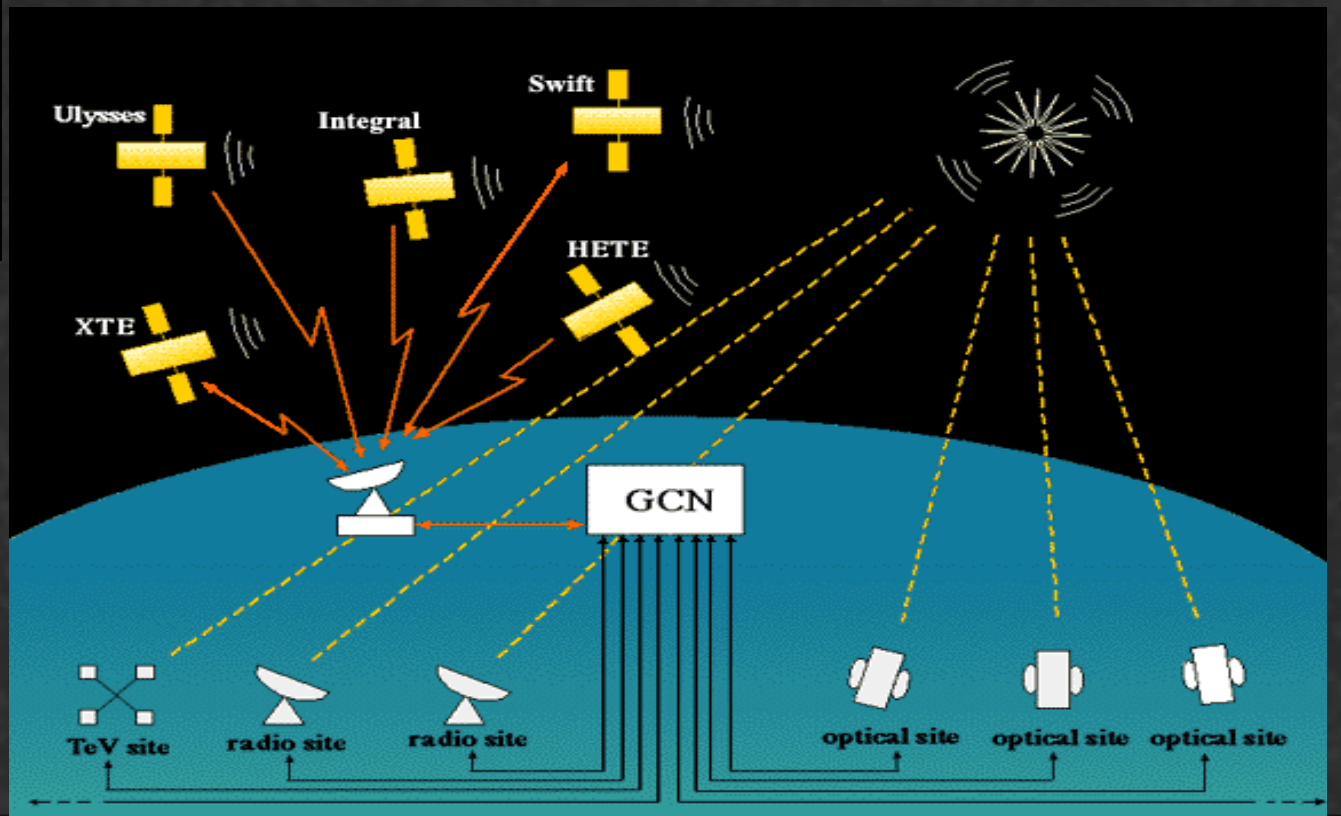
Massive star collapse

5 unsolved GRB observational problems

1. **Discovery most distant gravitationaly bounded objects Z >10-12.**
2. **Discovery of the Prompt Optical Emission from Short GRB.**
3. **Optical Precursors Detection**
4. **Prompt optical polarizations discovery.**
5. **High time resolution optical observations.**

GCN global physical expirement

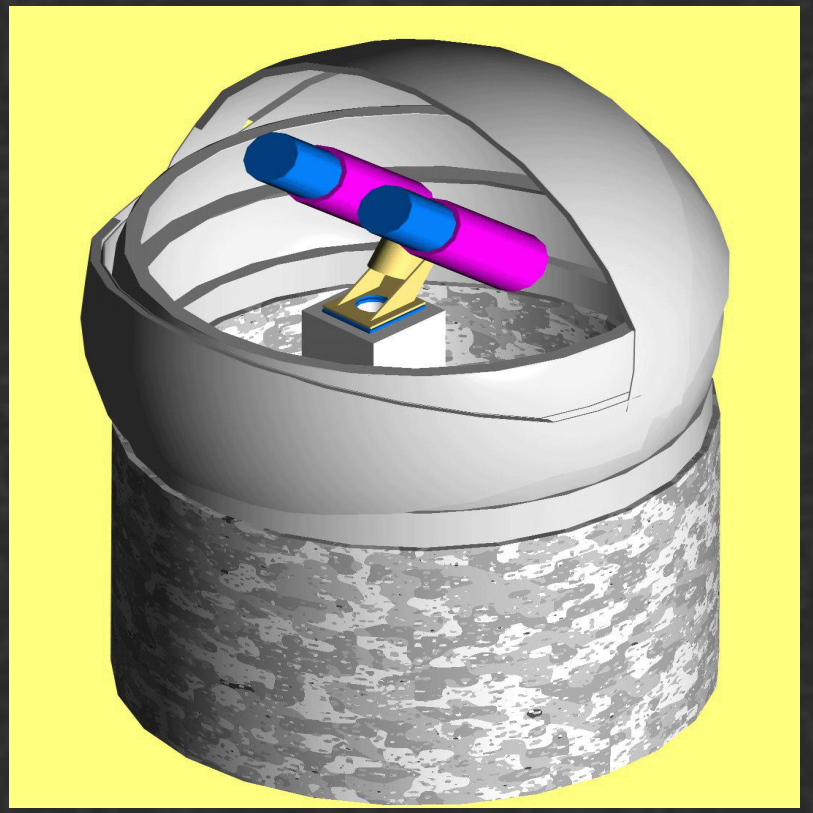




MASTER Near Moscow
Started 2002

Second Generation Robotic Telescope MASTER II

Colors, Polarization



MASTER II (D=400mm)

- FOV= 2x4 = 8 square degrees up to 20-21 up.

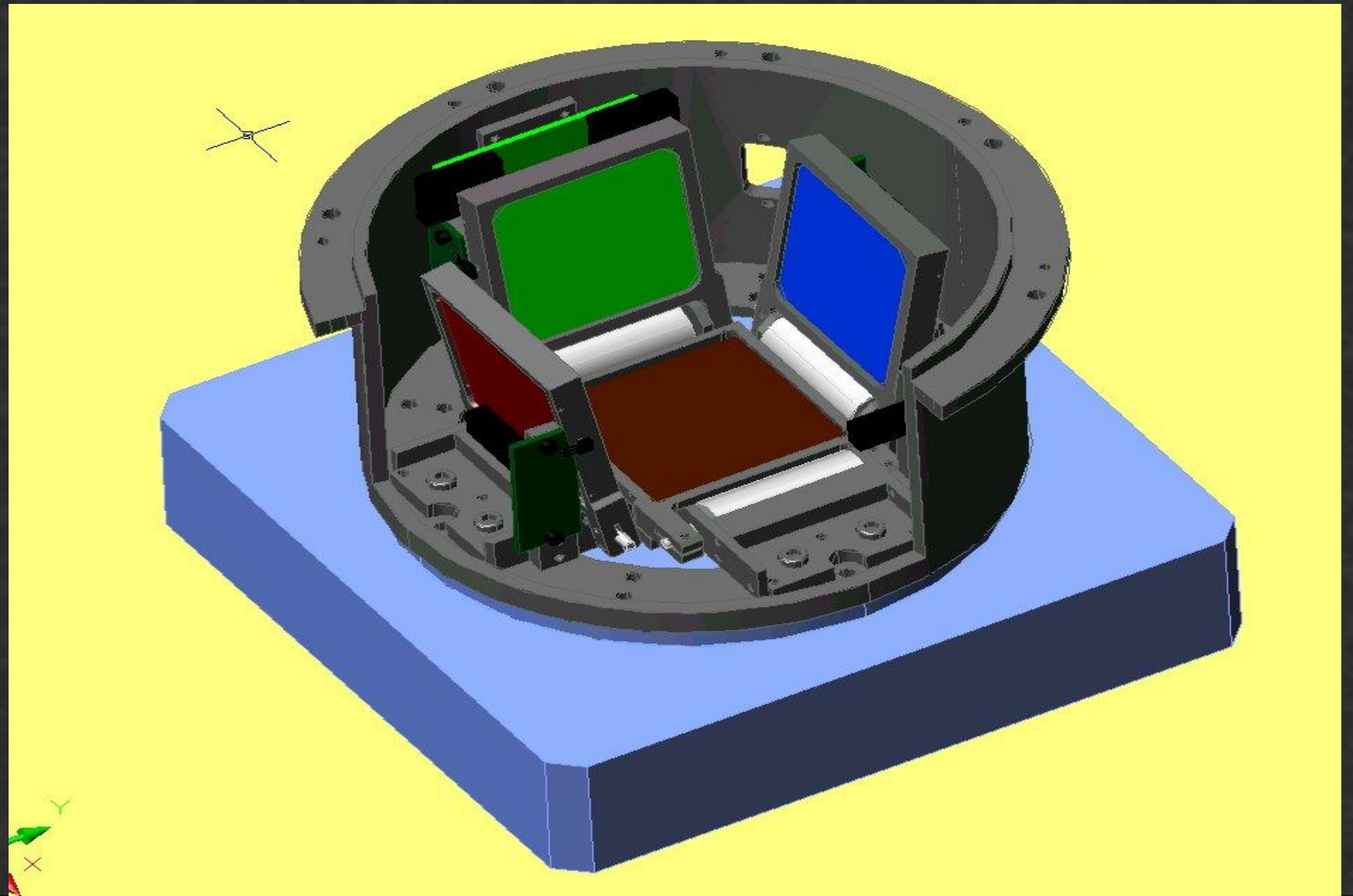
- Very Wide Field Cameras

MACTEP VWF

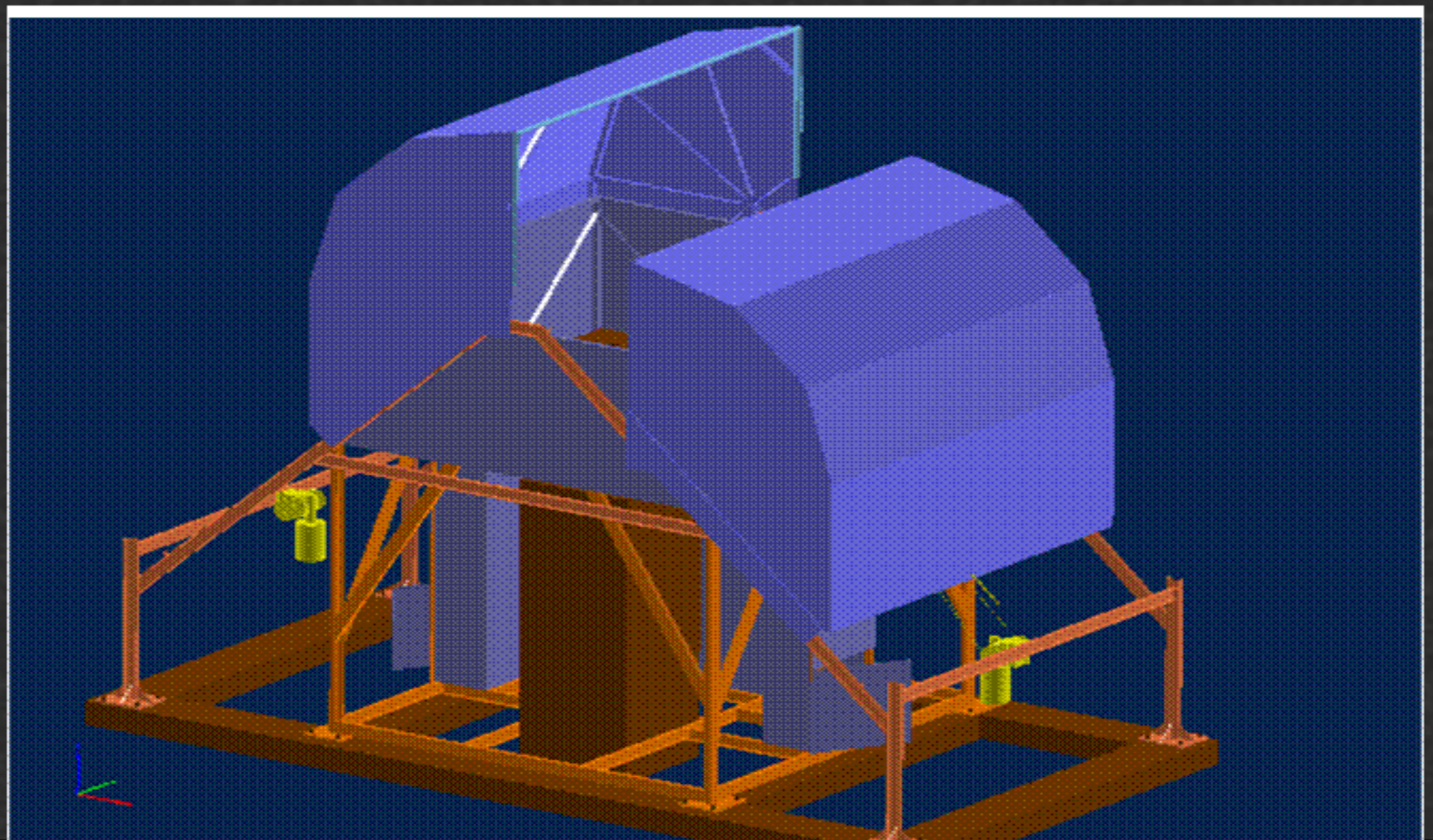
•FOV=400 square degrees up to 12 mag per 1 s.

•Time Resolution 150 ms

MASTER Photometer

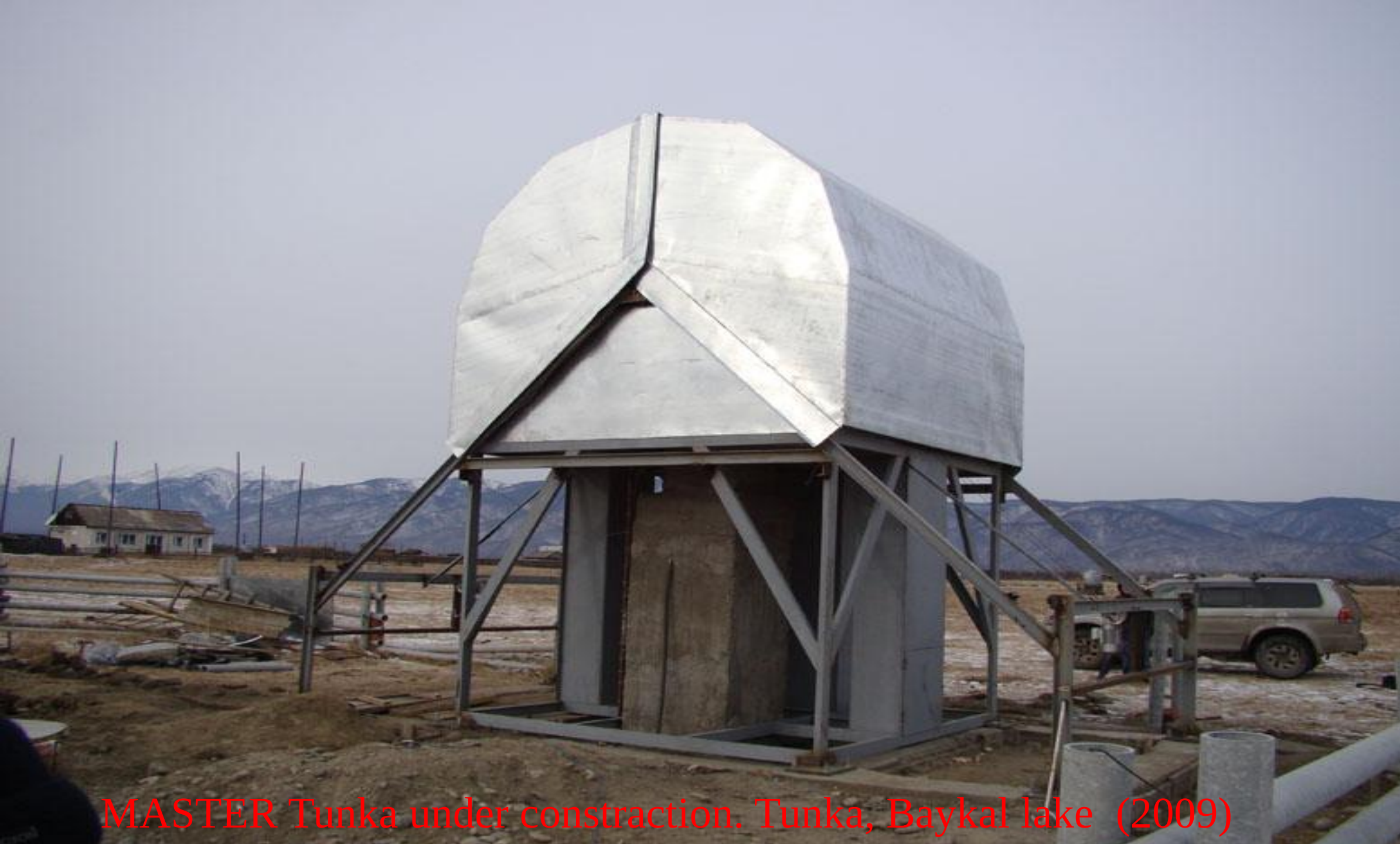


Sibirian Roof (up to -50 C)



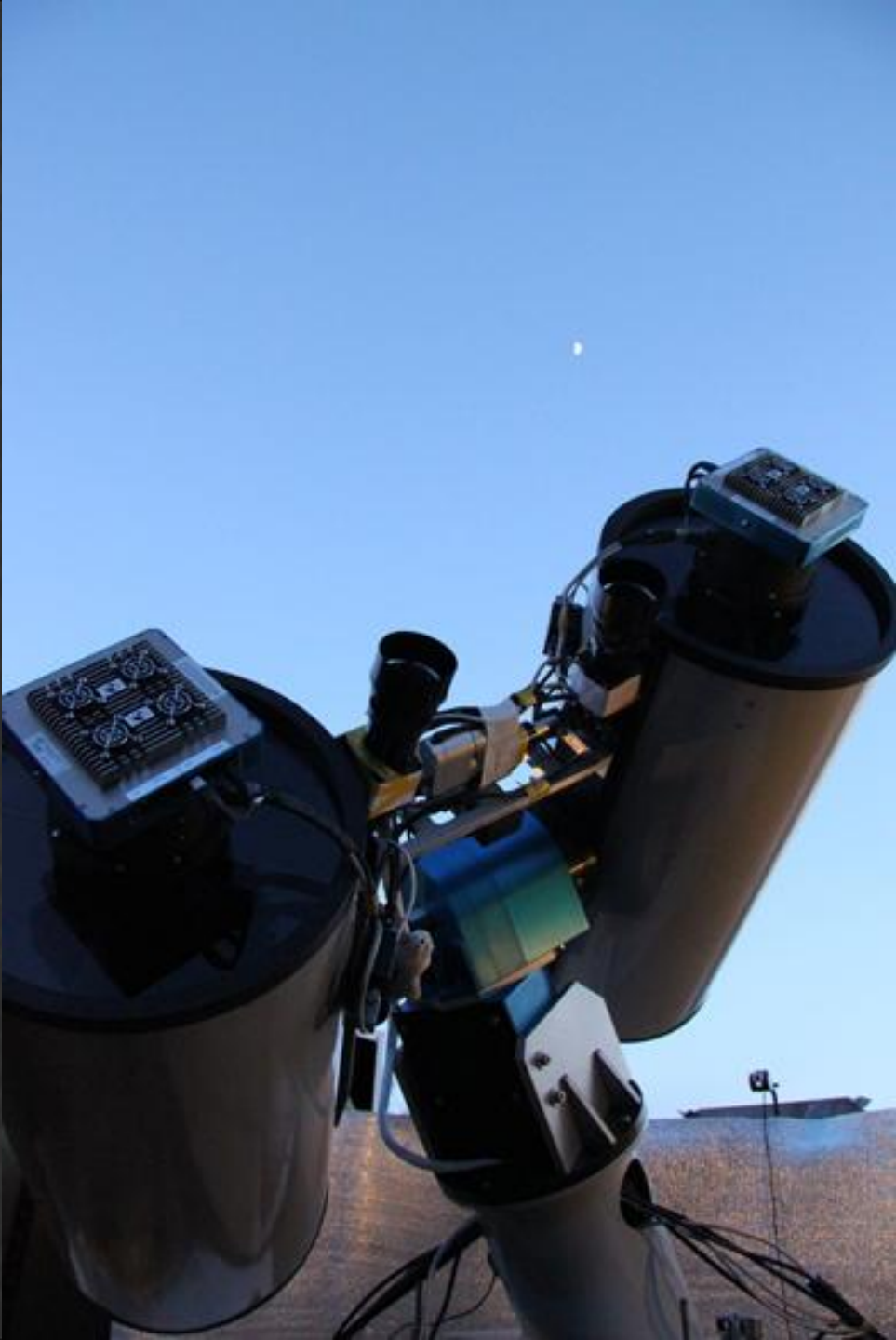
MASTER-Net (2008-2011)

MASTER-Kislovodsk (SAI MSU)



MASTER Tunka under constraction. Tunka, Baykal lake (2009)

BLAGOVESCHENSk



MASTER Information flow structure

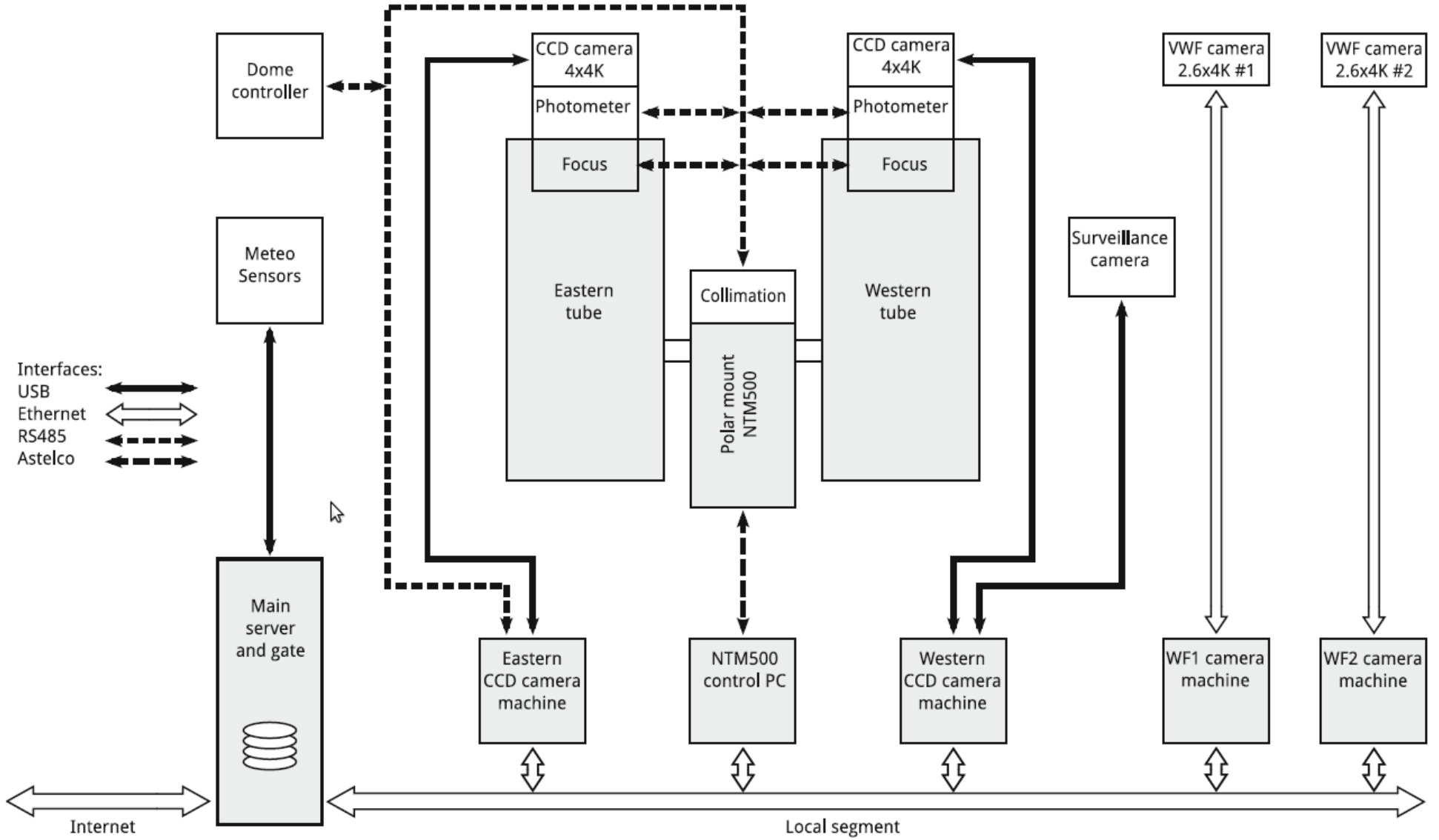


Fig. 8 The general structure of the MASTER II telescope complex. The various interface types are shown

Observational process

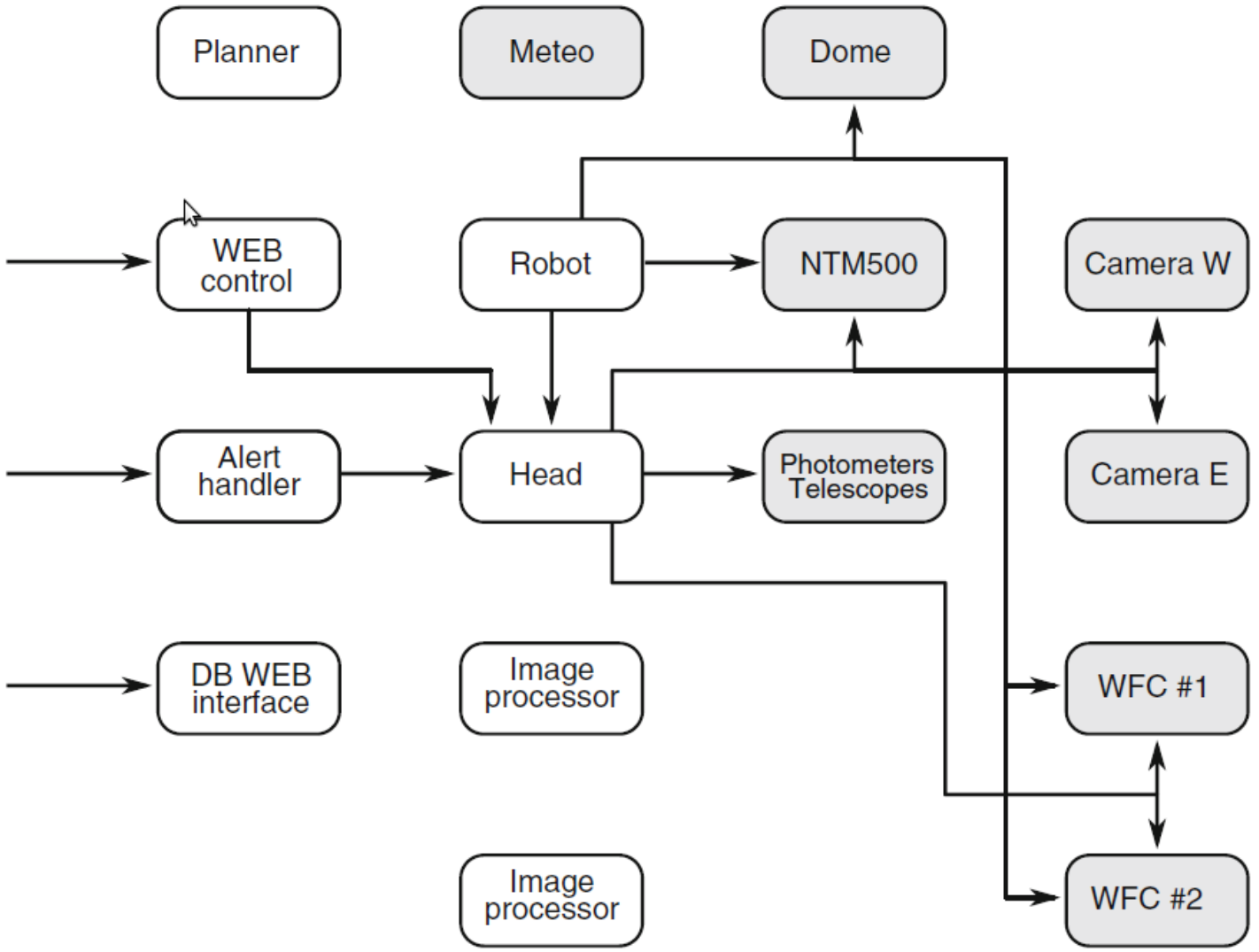
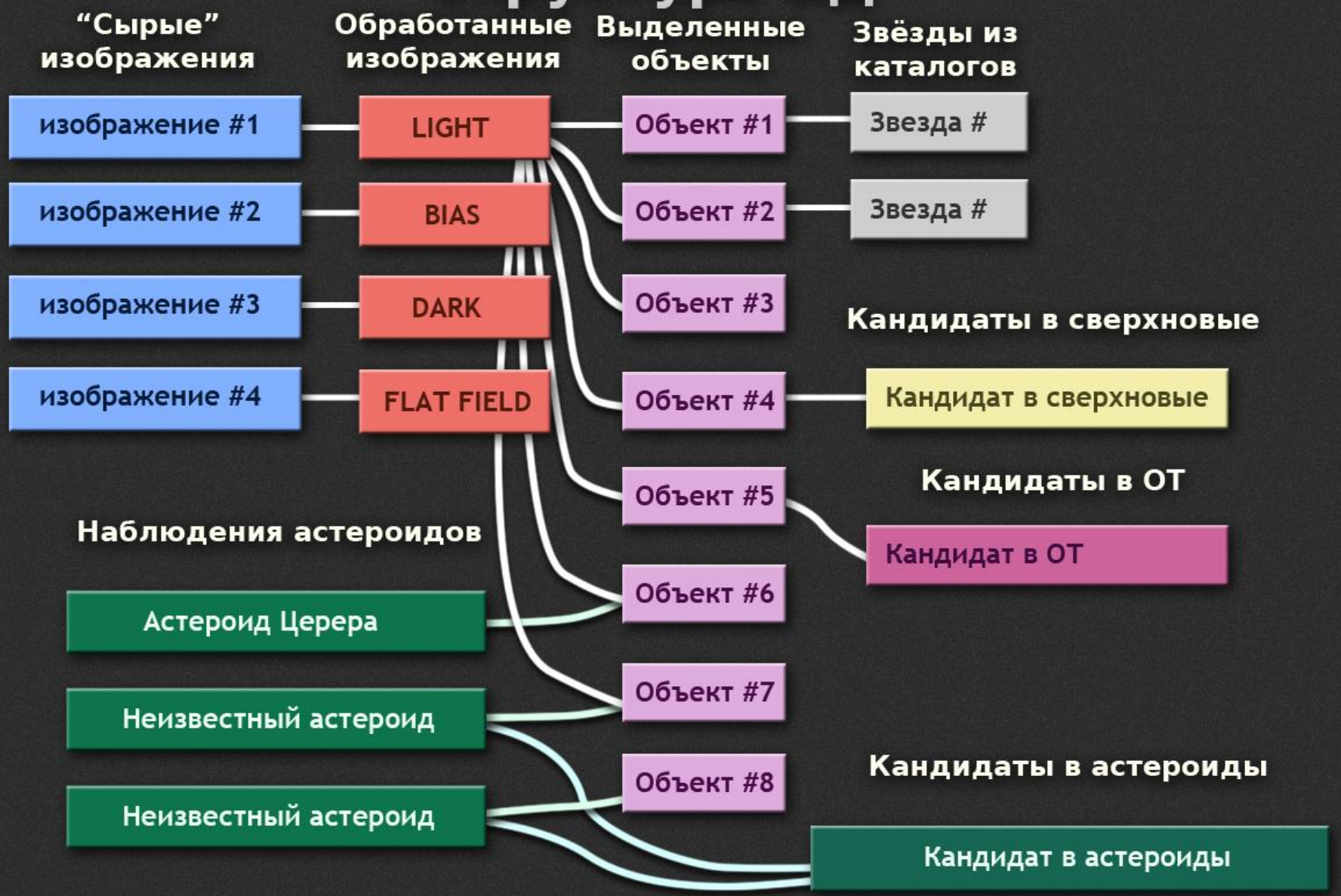


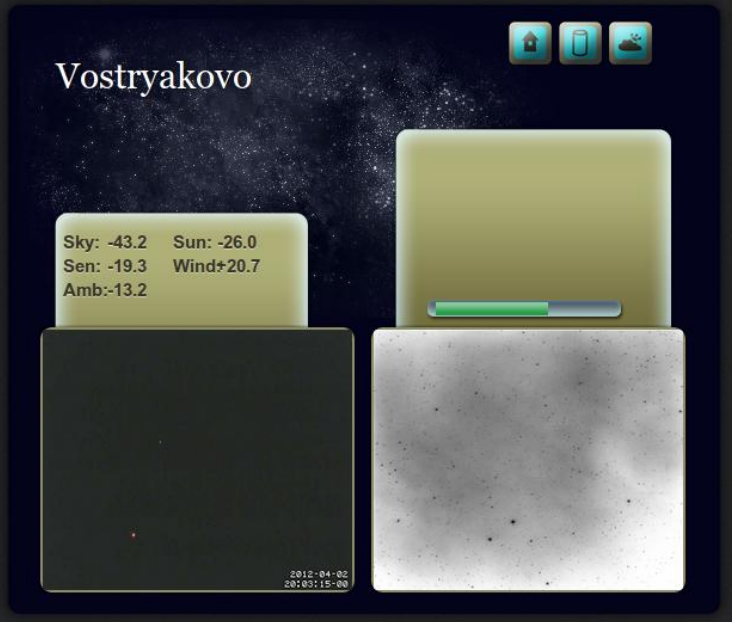
Fig. 9 The general scheme and network connections of software components of MASTER II telescope. The *arrows point* from clients to server programs. The components serving hardware are shown in *grey color*

Real Time Reduction

Структура БД



Real Time Video Conrol



Change view

MASTER II Tunka Database: Raw images

Please use the reference to MASTER DataBase as Lipunov et al., 2010, MASTER Robotic Net, Advances in Astronomy, vol. 2010, pp. 1-7

MASTER WFC:
Raw | Processing | Search
Single sets | Single images
SN | Asteroid | Transient | Comet

MASTER II:
Raw | Processing | Search by orbit elements | Search
SN | Asteroid | Transient | New transient | Comet
Manual control | Planner | Planner Results

General:
SN list | Sky map
Meteo | Tunka page
Users list | Users statistic

Pages: [1] 2 3 4 5 ... 9634

Id	Date time	Coord	Exp	Object	Image_type	Tube	File path	Ccd temp	Filter	Instrum
Order by:							Observer:			24 rpp
date -	– + 10 min	WHERE					ORDER BY			Search
231469	2012-08-13 21:37:27	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	EAST	/master/imdata/2012/08/13/231469.fit.gz	-10.0	W	P- | P+ F gz | Del
231468	2012-08-13 21:37:27	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	WEST	/master/imdata/2012/08/13/231468.fit.gz	-20.1	W	P- | P+ F gz | Del
231467	2012-08-13 21:36:29	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	EAST	/master/imdata/2012/08/13/231467.fit.gz	-10.0	W	P- | P+ F gz | Del
231465	2012-08-13 21:36:27	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	WEST	/master/imdata/2012/08/13/231465.fit.gz	-20.1	W	P- | P+ F gz | Del
231463	2012-08-13 21:35:30	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	WEST	/master/imdata/2012/08/13/231463.fit.gz	-20.2	W	P- | P+ F gz | Del
231462	2012-08-13 21:35:29	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	EAST	/master/imdata/2012/08/13/231462.fit.gz	-10.0	W	P- | P+ F gz | Del
231461	2012-08-13 21:34:32	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	EAST	/master/imdata/2012/08/13/231461.fit.gz	-10.0	W	P- | P+ F gz | Del
231470	2012-08-13 21:34:32	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	SDARK	SDARK	EAST	/master/imdata/2012/08/13/231470.fit.gz	-10.0	W	P- | P+ F gz | Del
231471	2012-08-13 21:34:29	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	SDARK	SDARK	WEST	/master/imdata/2012/08/13/231471.fit.gz	-20.0	W	P- | P+ F gz | Del
231460	2012-08-13 21:34:29	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	WEST	/master/imdata/2012/08/13/231460.fit.gz	-20.3	W	P- | P+ F gz | Del
231459	2012-08-13 21:33:37	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	EAST	/master/imdata/2012/08/13/231459.fit.gz	-10.1	W	P- | P+ F gz | Del
231458	2012-08-13 21:33:37	$01^h\,34^m\,33.0^s$ $-28^d\,05^m\,45^s$	-10	DARK	DARK	WEST	/master/imdata/2012/08/13/231458.fit.gz	-20.4	W	P- | P+ F gz | Del
231457	2012-08-13 21:32:01	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231457.fit.gz	-10.0	W	P- | P+ F gz | Del
231464	2012-08-13 21:31:59	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231464.fit.gz	-20.0	W	P- | P+ F gz | Del
231456	2012-08-13 21:31:59	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231456.fit.gz	-20.2	W	P- | P+ F gz | Del
231455	2012-08-13 21:30:31	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231455.fit.gz	-10.0	W	P- | P+ F gz | Del
231454	2012-08-13 21:30:30	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231454.fit.gz	-20.1	W	P- | P+ F gz | Del
231453	2012-08-13 21:29:02	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231453.fit.gz	-10.0	W	P- | P+ F gz | Del
231466	2012-08-13 21:29:02	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231466.fit.gz	-10.0	W	P- | P+ F gz | Del
231452	2012-08-13 21:29:01	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231452.fit.gz	-20.1	W	P- | P+ F gz | Del
231451	2012-08-13 21:27:32	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231451.fit.gz	-10.0	W	P- | P+ F gz | Del
231450	2012-08-13 21:27:31	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231450.fit.gz	-20.0	W	P- | P+ F gz | Del
231448	2012-08-13 21:26:02	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	WEST	/master/imdata/2012/08/13/231448.fit.gz	-20.2	W	P- | P+ F gz | Del
231449	2012-08-13 21:26:02	$01^h\,26^m\,56.0^s$ $-28^d\,05^m\,47^s$	60	DARK	DARK	EAST	/master/imdata/2012/08/13/231449.fit.gz	-10.0	W	P- | P+ F gz | Del

Fits list

Pages: [1] 2 3 4 5 ... 9634

MASTER, 2002-2012

MASTER II Tunka Database: Processing images

Please use the reference to MASTER DataBase as Lipunov et al., 2010, MASTER Robotic Net, Advances in Astronomy, vol. 2010, pp. 1-7

MASTER WFC:
Raw | Processing | Search
Single sets | Single images
SN | Asteroid | Transient | Comet

MASTER II:
Raw | Processing | Search by orbit elements | Search
SN | Asteroid | Transient | New transient | Comet
Manual control | Planner | Planner Results

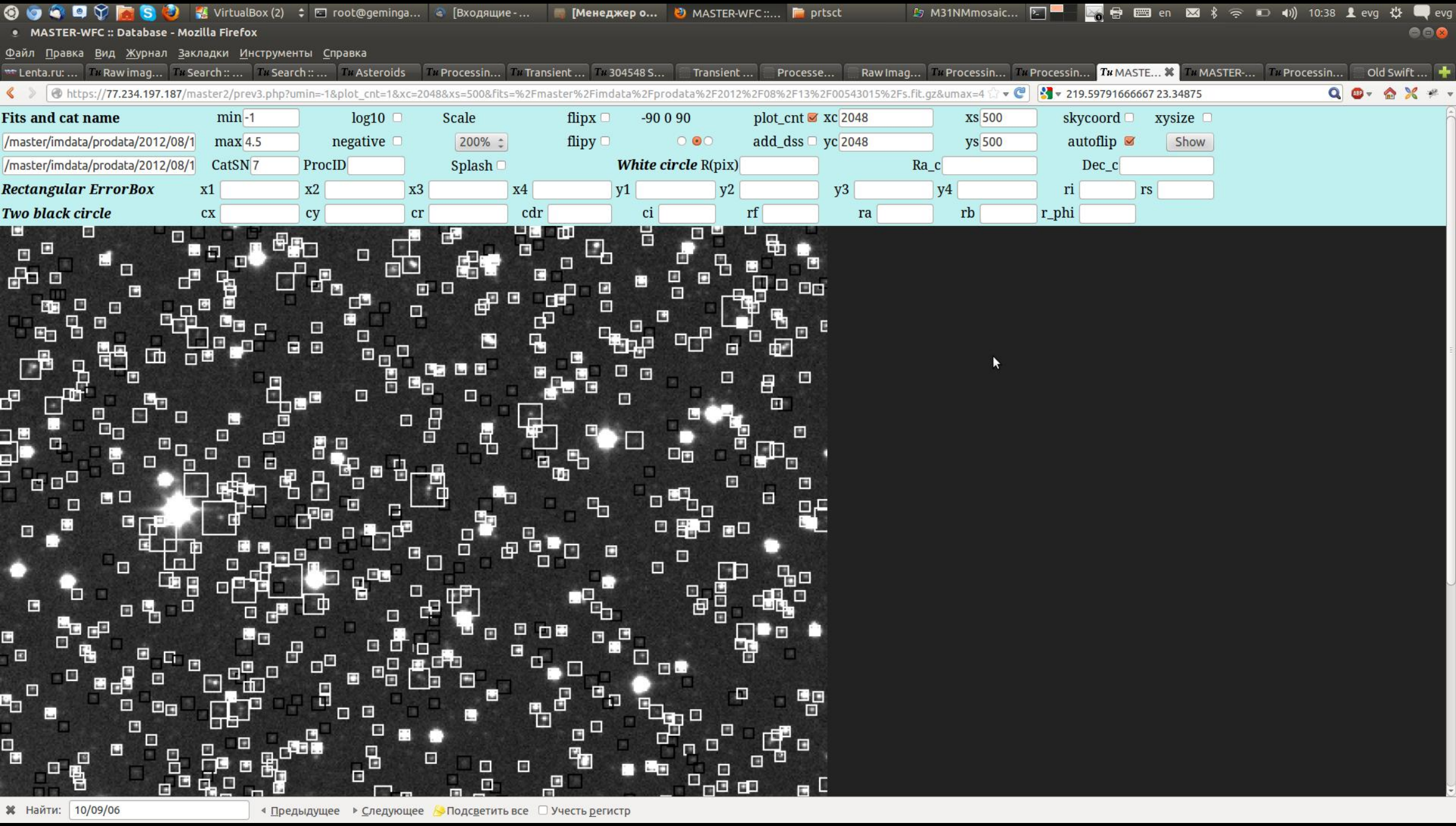
General:
SN list | Sky map
Meteo | Tunka page
Users list | Users statistic

Where: Order by: proc_data.datetime Search Reset

Pages: [1] 2 3 4 5 ... 4344

Id + -	Coord	Pro.type	Date time + -	Exp.time	Limit	Filt.	Tube.	raw_id	proc_id	fwhm	e	Dir.	Actions
543023	$01^h\ 34^m\ 33.0^s$ $-28^d\ 05^m\ 45^s$	SDARK	2012-08-13 21:34:32	-10	0.0	W	EAST	231470		0.0	0.0	/master/imdata/prodata//2012/08/13/00543023	P- | P+ F O B G=703
543024	$01^h\ 34^m\ 33.0^s$ $-28^d\ 05^m\ 45^s$	SDARK	2012-08-13 21:34:29	-10	0.0	W	WEST	231471		0.0	0.0	/master/imdata/prodata//2012/08/13/00543024	P- | P+ F O B G=703
543022	$00^h\ 50^m\ 02.0^s$ $-28^d\ 06^m\ 02^s$	SDARK	2012-08-13 20:49:16	180	0.0	W	WEST	231396		0.0	0.0	/master/imdata/prodata//2012/08/13/00543022	P- | P+ F O B G=647
543021	$18^h\ 03^m\ 13.9^s$ $+10^d\ 09^m\ 13^s$	Survey	2012-08-13 14:32:51	180	0.0	W	EAST	231393	543021,19153,542821,542527,543001	5.9	0.2	/master/imdata/prodata//2012/08/13/00543021	P- | P+ F O B SN + G=41 T
543020	$18^h\ 10^m\ 03.4^s$ $+10^d\ 02^m\ 11^s$	Survey	2012-08-13 14:32:51	180	0.0	W	WEST	231392	543020,19154,542993,542765,543000	5.4	0.2	/master/imdata/prodata//2012/08/13/00543020	P- | P+ F O B SN + G=27 T
543019	$19^h\ 09^m\ 12.6^s$ $+35^d\ 45^m\ 05^s$	Survey	2012-08-13 14:28:43	180	18.4	W	EAST	231391	543019,19153,542821,542527,543015	3.2	0.2	/master/imdata/prodata//2012/08/13/00543019	P- | P+ F O B SN + G=10 T
543018	$19^h\ 00^m\ 42.1^s$ $+35^d\ 55^m\ 48^s$	Survey	2012-08-13 14:28:42	180	18.0	W	WEST	231390	543018,19154,542993,542765,543014	4.0	0.2	/master/imdata/prodata//2012/08/13/00543018	P- | P+ F O B SN + G=45 T
543017	$19^h\ 09^m\ 12.8^s$ $+35^d\ 45^m\ 06^s$	Survey	2012-08-13 14:24:49	180	18.7	W	EAST	231389	543017,19153,542821,542527,543015	2.7	0.2	/master/imdata/prodata//2012/08/13/00543017	P- | P+ F O B SN + G=10 T
543016	$19^h\ 00^m\ 42.4^s$ $+35^d\ 55^m\ 49^s$	Survey	2012-08-13 14:24:47	180	18.1	W	WEST	231388	543016,19154,542993,542765,543014	4.2	0.2	/master/imdata/prodata//2012/08/13/00543016	P- | P+ F O B SN + G=45 T
543015	$19^h\ 09^m\ 13.0^s$ $+35^d\ 45^m\ 07^s$	Survey	2012-08-13 14:20:58	180	18.4	W	EAST	231387	543015,19153,542821,542527	2.8	0.2	/master/imdata/prodata//2012/08/13/00543015	P- | P+ F O B SN + G=10
543014	$19^h\ 00^m\ 42.6^s$ $+35^d\ 55^m\ 50^s$	Survey	2012-08-13 14:20:57	180	17.7	W	WEST	231386	543014,19154,542993,542765	4.7	0.2	/master/imdata/prodata//2012/08/13/00543014	P- | P+ F O B SN + G=45
543013	$19^h\ 59^m\ 54.0^s$ $+15^d\ 43^m\ 58^s$	Survey	2012-08-13 14:17:07	180	17.3	W	EAST	231385	543013,19153,542821,542527,543009	2.7	0.2	/master/imdata/prodata//2012/08/13/00543013	P- | P+ F O B SN + G=1 T
543012	$19^h\ 52^m\ 47.2^s$ $+15^d\ 56^m\ 03^s$	Survey	2012-08-13 14:17:07	180	16.6	W	WEST	231384	543012,19154,542993,542765,543008	4.5	0.2	/master/imdata/prodata//2012/08/13/00543012	P- | P+ F O B SN + G=0 T
543011	$19^h\ 59^m\ 54.1^s$ $+15^d\ 44^m\ 00^s$	Survey	2012-08-13 14:13:15	180	17.3	W	EAST	231383	543011,19153,542821,542527,543009	2.9	0.2	/master/imdata/prodata//2012/08/13/00543011	P- | P+ F O B SN + G=1 T
543010	$19^h\ 52^m\ 47.4^s$ $+15^d\ 56^m\ 05^s$	Survey	2012-08-13 14:13:14	180	16.6	W	WEST	231382	543010,19154,542993,542765,543008	4.3	0.2	/master/imdata/prodata//2012/08/13/00543010	P- | P+ F O B SN + G=0 T
543009	$19^h\ 59^m\ 54.2^s$ $+15^d\ 44^m\ 03^s$	Survey	2012-08-13 14:08:52	180	17.7	W	EAST	231381	543009,19153,542821,542527	2.9	0.2	/master/imdata/prodata//2012/08/13/00543009	P- | P+ F O B SN + G=1
543008	$19^h\ 52^m\ 47.6^s$ $+15^d\ 56^m\ 08^s$	Survey	2012-08-13 14:08:52	180	16.8	W	WEST	231380	543008,19154,542993,542765	4.3	0.2	/master/imdata/prodata//2012/08/13/00543008	P- | P+ F O B SN + G=0
543007	$20^h\ 16^m\ 33.4^s$ $+15^d\ 44^m\ 12^s$	Survey	2012-08-13 14:05:05	180	17.5	W	EAST	231379	543007,19153,542821,542527,543005	2.8	0.1	/master/imdata/prodata//2012/08/13/00543007	P- | P+ F O B SN + G=7 T
543006	$20^h\ 09^m\ 27.3^s$ $+15^d\ 56^m\ 17^s$	Survey	2012-08-13 14:05:04	180	16.8	W	WEST	231378	543006,19154,542993,542765,543002	4.2	0.2	/master/imdata/prodata//2012/08/13/00543006	P- | P+ F O B SN + G=4 T
543005	$20^h\ 16^m\ 33.3^s$ $+15^d\ 44^m\ 17^s$	Survey	2012-08-13 14:01:10	180	16.5	W	EAST	231377	543005,19153,542821,542527	3.1	0.3	/master/imdata/prodata//2012/08/13/00543005	P- | P+ F O B SN + G=7
543004	$20^h\ 09^m\ 27.4^s$ $+15^d\ 56^m\ 22^s$	Survey	2012-08-13 14:01:10	180	16.0	W	WEST	231376	543004,19154,542993,542765	4.4	0.1	/master/imdata/prodata//2012/08/13/00543004	P- | P+ F O B SN + G=4
543003	$20^h\ 16^m\ 33.3^s$ $+15^d\ 44^m\ 24^s$	Survey	2012-08-13 13:57:16	180	17.5	W	EAST	231375	543003,19153,542821,542527	4.8	0.4	/master/imdata/prodata//2012/08/13/00543003	P- | P+ F O B SN + G=7
543002	$20^h\ 09^m\ 27.5^s$ $+15^d\ 56^m\ 29^s$	Survey	2012-08-13 13:57:16	180	16.8	W	WEST	231374	543002,19154,542993,542765	5.5	0.2	/master/imdata/prodata//2012/08/13/00543002	P- | P+ F O B SN + G=4
543001	$18^h\ 03^m\ 14.0^s$ $+10^d\ 09^m\ 17^s$	Survey	2012-08-13 13:53:03	180	16.6	W	EAST	231373	543001,19153,542821,542527,542999	3.0	0.2	/master/imdata/prodata//2012/08/13/00543001	P- | P+ F O B SN + G=41 T

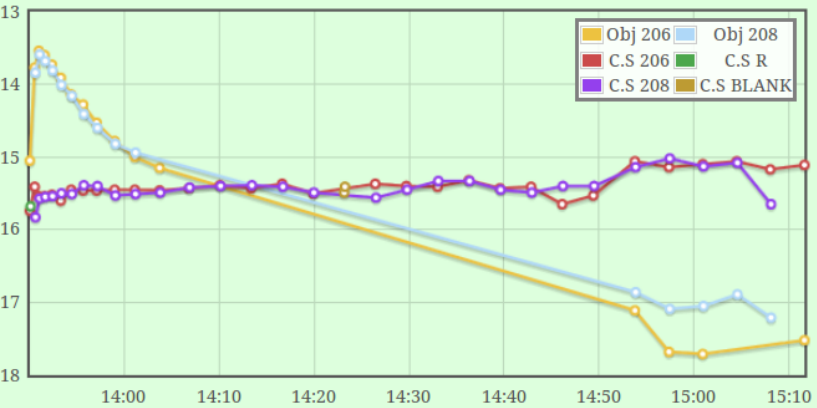
Pages: [1] 2 3 4 5 ... 4344


MASTER-WFC :: Database - Mozilla Firefox
Файл Правка Вид Журнал Закладки Инструменты Справка
https://77.234.197.187/master2/prev3.php?umin=-1&plot_cnt=1&xc=2048&xs=500&fits=%2Fmaster%2Fimdata%2Fprodata%2F2012%2F08%2F13%2F00543015%2Fs.fit.gz&umax=4
Fits and cat name
min -1
log10
Scale
flipx
-90 0 90
plot_cnt
xc 2048
xs 500
skycoord
xysize
/master/imdata/prodata/2012/08/1
max 4.5
negative
200%
flipy
add_dss
yc 2048
ys 500
autoflip
Show
/master/imdata/prodata/2012/08/1
CatSN 7
ProcID
Splash
White circle R(pix)
Ra_c
Dec_c
Rectangular ErrorBox
x1
x2
x3
x4
y1
y2
y3
y4
ri
rs
Two black circle
cx
cy
cr
cdr
ci
rf
ra
rb
r_phi
Найти: 10/09/06
Предыдущее
Следующее
Подсветить все
Учесть регистр

MASTER II Tunka Database: Processing images

Please use the reference to MASTER DataBase as Lipunov et al., 2010, MASTER Robotic Net, Advances in Astronomy, vol. 2010, pp. 1-7

autocompar in use 28.6838 55.6304 28.6838 55.6304SELECT avg(mag),max(proc_data.id) from stars,proc_data where proc_data.id=stars.proc_id and stars.coord2000@'<(28.6838 d, 55.6304 d),0.00083333333333333 d>'::scircle and datetime>'2010-09-06 13:50:05.580' and datetime<'2010-09-06 15:11:37.176' and proc_data.error=0Array;15.1109677899268;15.1109677899268 select set_sphere_output('HMS');SELECT coord2000 from stars where '<(28.6838 d, 55.6304 d), 0.2 d>'::scircle ~ coord2000 and '<(28.6838 d, 55.6304 d), 0.00083333333333333 d>'::scircle !~ coord2000 and class=1 and proc_id=22109 ORDER BY abs (mag-15.1109677899268) LIMIT 1;



Show: Obj 206 Obj 208 C.S 206 C.S R C.S 208 C.S BLANK
Mouse hovers at (0, 0).
Enable tooltip Clear selection Zoom to selection. SELECT -1.0*round(stars.mag::numeric,2) as mag, (EXTRACT (EPOCH FROM proc_data.datetime))*1000 as datetime,get_filter(proc_data.filter,proc_data.id_camera) as filter from stars,proc_data where proc_data.id=stars.proc_id and stars.coord2000@'<(28.6838 d, 55.6304 d),0.00083333333333333 d>'::scircle and datetime>'2010-09-06 13:50:05.580' and datetime<'2010-09-06 15:11:37.176' ORDER BY proc_data.datetime I here!!!!data2= "C.S 206":{label: "C.S 206",data:[,[1283781005581,-15.740],[1283781035827,-15.410],[1283781062354,-15.540],[1283781098147,-15.540],[1283781144471,-15.520],[1283781200660,-15.600],[1283781266335,-15.450],[1283781341621,-15.460],[1283781427550,-15.460],[1283781540998,-15.450],[1283781668189,-15.450],[1283781824542,-15.460],[1283782009656,-15.430],[1283782205424,-15.390],[1283782402548,-15.430],[1283782598711,-15.370],[1283782794768,-15.500],[1283783186650,-15.370],[1283783382801,-15.400],[1283783580532,-15.410],[1283783777553,-15.320],[1283783973904,-15.430],[1283784170574,-15.410],[1283784366960,-15.650],[1283784563740,-15.530],[1283784826190,-15.060],[1283785041849,-15.140],[1283785254891,-15.100],[1283785468981,-15.060],[1283785681273,-15.170],[1283785897175,-15.110]]}, "C.S R":{label: "C.S R",data:[,[1283781010122,-15.680]]}, "C.S 208":{label: "C.S 208",data:[,[1283781040475,-15.830],[1283781067157,-15.570],[1283781102957,-15.550],[1283781148983,-15.540],[1283781205101,-15.500],[1283781270936,-15.510],[1283781346222,-15.390],[1283781432488,-15.400],[1283781545527,-15.530],[1283781672795,-15.510],[1283781829084,-15.490],[1283782014276,-15.420],[1283782210170,-15.400],[1283782407608,-15.390],[1283782603391,-15.410],[1283782799370,-15.490],[1283783191399,-15.560],[1283783387665,-15.450],[1283783585202,-15.330],[1283783782252,-15.330],[1283783978610,-15.450],[1283784175449,-15.490],[1283784371723,-15.400],[1283784568727,-15.400],[1283784830945,-15.140],[1283785046649,-15.020],[1283785259751,-15.130],[1283785473927,-15.080],[1283785686037,-15.650]]}, "C.S BLANK":{label: "C.S BLANK",data:[,[1283782990481,-15.490],[1283782995218,-15.410]]}, q=SELECT -1.0*round(stars.mag::numeric,2) as mag, (EXTRACT (EPOCH FROM proc_data.datetime))*1000 as datetime,get_filter(proc_data.filter,proc_data.id_camera) as filter from stars,proc_data where proc_data.id=stars.proc_id and stars.coord2000@'<(28.478835008333 d, 55.509393021111 d),0.00083333333333333 d>'::scircle and datetime>'2010-09-06 13:50:05.580' and datetime<'2010-09-06 15:11:37.176' ORDER BY proc_data.datetime add_diagram startadd_diagram start add_diagram finish2add_diagram finishwh=where proc_data.id=stars.proc_id and stars.coord2000@'<(28.6838 d, 55.6304 d),0.00083333333333333 d>'::scircle and datetime>'2010-09-06 13:50:05.580' and datetime<'2010-09-06 15:11:37.176' sort=datetime viewobi=0

MASTER II Tunka Database: Transient

Please use the reference to MASTER DataBase as Lipunov et al., 2010, MASTER Robotic Net, Advances in Astronomy, vol. 2010, pp. 1-7

MASTER WFC:
Raw | Processing | Search
Single sets | Single images
SN | Asteroid | Transient | Comet

MASTER II:
Raw | Processing | Search by orbit elements | Search
SN | Asteroid | Transient | New transient | Comet
Manual control | Planner | Planner Results

General:
SN list | Sky map
Meteo | Tunka page
Users list | Users statistic

Where: transients.datetime>now()-'7 days'::interval ar Order by: id desc Preview: No Search Reset

Pages: [1] 2 3 4 5 ... 22

ALL TO VIEW | All | Undef | Noise | Stars/Galx | ??? | Yes | Asteroids & Comet | Variable stars | SN? | FLUSH_STAR? | Def. VS

select set_sphere_output('HMS'); select set_sphere_output_precision(1); SELECT transients.id,stars.coord2000,round(transients.mag::numeric,2) as mag,round (sn::numeric,1) as sn, round (x::numeric,1) as x ,round(y::numeric,2) as y, round (stars.fwhm::numeric,1) as fwhm,round (a::numeric,1) as a,round (b::numeric,1) as b,round (t::numeric,2) as t,class,transients.status,proc_id,transients.datetime,0 as cat_mag,round(flux::numeric,1) as flux,transients.s_id2,transients.proc_id_not,transients.name FROM transients,stars WHERE transients.s_id1=stars.id and transients.datetime>now()-7 days'::interval and fwhm>1 and fwhm<5 and x>100 and x<4000 and y>100 and y<4000 and transients.status in (0,20,36,37,38) ORDER BY id desc OFFSET 0 LIMIT 50

+id-	datetime	coord2000	mag	Band	flux	s/n	xc	yc	fwhm	a	b	PA	N	Gal / VS	d_ra	ddec	links	Instrum	user
315771	2012-08-13 14:28:43.53	19h 13m 11.40s +35d 45m 48.5s	14.62	W	48785.3	52.0	3594.2	1956.17	4.7	2.3	2.1	10.30			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315770	2012-08-13 14:28:43.53	19h 12m 16.56s +35d 37m 03.4s	14.45	W	57022.1	51.1	3252.1	2252.66	5.0	3.1	2.1	-15.10		PGC2067319	0.2W	0.5S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315768	2012-08-13 14:28:43.53	19h 10m 43.18s +35d 18m 32.3s	17.91	W	2351.8	5.8	2671.6	2871.26	4.3	0.9	0.8	5.90			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315767	2012-08-13 14:28:43.53	19h 10m 04.93s +35d 40m 09.3s	16.72	W	7033.2	10.3	2393.7	2191.59	3.6	1.2	0.9	-2.50			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315766	2012-08-13 14:28:43.53	19h 10m 04.69s +35d 39m 02.7s	16.97	W	5598.6	9.8	2393.7	2227.06	3.5	1.2	1.0	-7.00			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315764	2012-08-13 14:28:43.53	19h 08m 50.08s +35d 28m 05.3s	14.69	W	45674.3	121.0	1923.0	2596.24	2.7	1.4	0.9	-0.10			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315763	2012-08-13 14:28:43.53	19h 08m 42.20s +35d 55m 32.9s	18.18	W	1832.0	6.2	1838.5	1721.28	2.0	0.8	0.5	-2.60			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315761	2012-08-13 14:28:43.53	19h 08m 24.98s +35d 43m 25.8s	15.14	W	30264.9	71.8	1741.5	2112.46	2.8	1.3	1.1	-54.60			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315760	2012-08-13 14:28:43.53	19h 08m 15.33s +34d 56m 17.1s	13.99	W	87433.4	148.8	1734.2	3620.84	2.6	1.5	1.3	84.30			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315759	2012-08-13 14:28:43.53	19h 08m 17.74s +36d 42m 23.0s	15.18	W	29166.6	37.4	1625.0	230.69	3.7	1.9	1.8	18.00			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315758	2012-08-13 14:28:43.53	19h 07m 54.33s +34d 51m 58.7s	16.03	W	13287.4	21.2	1601.7	3763.57	4.8	1.9	1.2	-44.90			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315757	2012-08-13 14:28:43.53	19h 07m 53.34s +35d 10m 40.1s	14.61	W	49455.8	136.8	1573.8	3166.39	2.7	1.3	0.9	-23.90			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315756	2012-08-13 14:28:43.53	19h 07m 42.18s +35d 40m 38.5s	14.69	W	45950.0	49.9	1467.2	2211.54	4.1	2.8	1.7	-43.20			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315755	2012-08-13 14:28:43.53	19h 07m 47.77s +36d 39m 33.6s	17.67	W	2932.8	6.6	1436.3	327.89	3.7	1.0	0.7	0.10			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315753	2012-08-13 14:28:43.53	19h 07m 18.97s +35d 45m 20.9s	15.34	W	25227.9	55.9	1311.5	2066.47	3.5	1.5	1.0	-11.40			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315752	2012-08-13 14:28:43.53	19h 06m 59.28s +36d 08m 15.9s	18.06	W	2058.4	5.9	1159.3	1338.77	4.4	1.3	0.4	-30.10			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315751	2012-08-13 14:28:43.53	19h 06m 56.83s +36d 08m 03.9s	16.82	W	6411.6	20.2	1143.7	1345.71	3.3	1.2	0.6	-35.30			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315749	2012-08-13 14:28:42.828	18h 56m 23.41s +34d 54m 18.1s	14.42	W	48943.1	87.0	3997.8	348.42	3.6	1.7	1.5	10.30			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315744	2012-08-13 14:28:42.828	18h 57m 48.65s +35d 10m 40.3s	16.72	W	5859.6	11.1	3368.8	783.47	3.9	1.3	1.0	3.10			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315740	2012-08-13 14:24:49.416	19h 13m 11.39s +35d 45m 48.6s	14.51	W	64903.6	65.0	3593.0	1956.70	4.2	2.4	2.2	29.00			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315739	2012-08-13 14:24:49.416	19h 12m 16.58s +35d 37m 03.8s	14.41	W	71000.3	64.1	3251.1	2253.12	3.6	3.2	2.2	-20.00		PGC2067319	0W	0.1S	=>1. 2. N *	N S G Noice BS DS ? Y | -	
315736	2012-08-13 14:24:49.416	19h 11m 02.15s +35d 51m 33.4s	15.47	W	26824.4	71.0	2747.7	1812.36	4.1	1.5	0.9	18.20			0W	0S	=>1. 2. N *	N S G Noice BS DS ? Y | -	

304548 SN candidate Tunka Database :: MASTER II - Mozilla Firefox

Файл Правка Вид Журнал Закладки Инструменты Справка

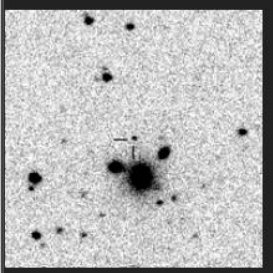
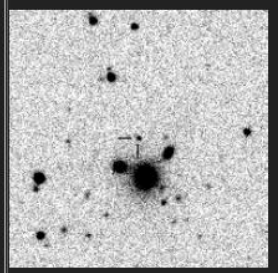
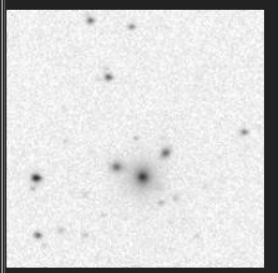
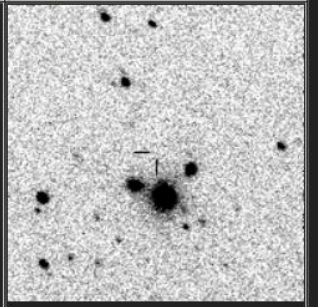
https://77.234.197.187/master2/stab.php?lt=%u0074%u0072%u0061%u006e%u0073%u005f%u006d%u0069%u006e%u0069%u002e%u0070%u0068%u0070%u003f%u0077%u0068%

+id-	datetime	coord2000	mag	Band	flux	s/n	xc	yc	fwhm	a	b	PA	N	Gal	d_ra	ddec	links	
304548	2012-05-23 17:03:38.432	14h 38m 23.50s +23d 20m -- -s	17.91	W	3004.2	10.8	1251.2	2031.31	3.2	1.1	0.9	-10.40		IC4475	3.6E	54.8N	=>1. 2. N *	N S G Noice BS DS ? Y A C V Reobserv Send to IAU Pavel

Film Telegra

Fits name min -5 log10 Scale flipx -90 0 90 plot_cnt xc 219.5979166666 xs 0.1 skycoord xysize

/master/imdata/prodata//2012/05/ max 10 negative 200% flipy add_dss yc 23.34875 ys 0.1 autoflip ; Show

Second lap	Max. limit	Log + objects (dM=0.5)	Early
			
2012-05-23 17:03:38 W 19.48	2012-05-23 16:02:48 W 19.4	2012-05-23 17:03:38 W 19.48	2012-04-11 18:44:41 W 19.03

Найти: 10/09/06 Предыдущее Следующее Подсветить все Учесть регистр

MASTER-WFC :: Database - Mozilla Firefox

Файл Правка Вид Журнал Закладки Инструменты Справка

https://77.234.197.187/master2/prev.php?xc=219.59791666667&yc=23.34875&xs=0.1&ys=0.1&umin=-5&umax=10&fits=/master/imdata/prodata//2012/05/23/00536938/s.fit.gz&skyc

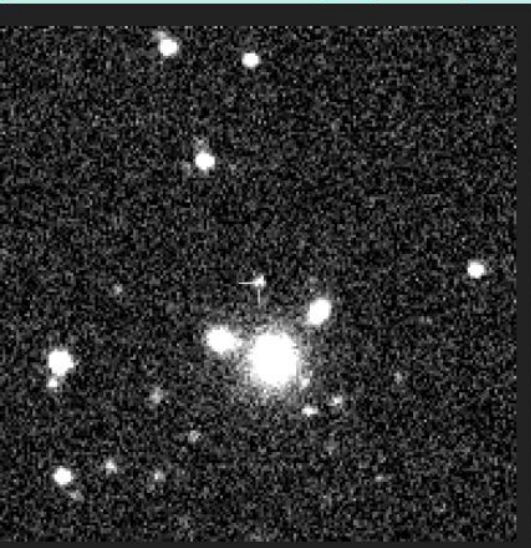
219.59791666667 23.34875

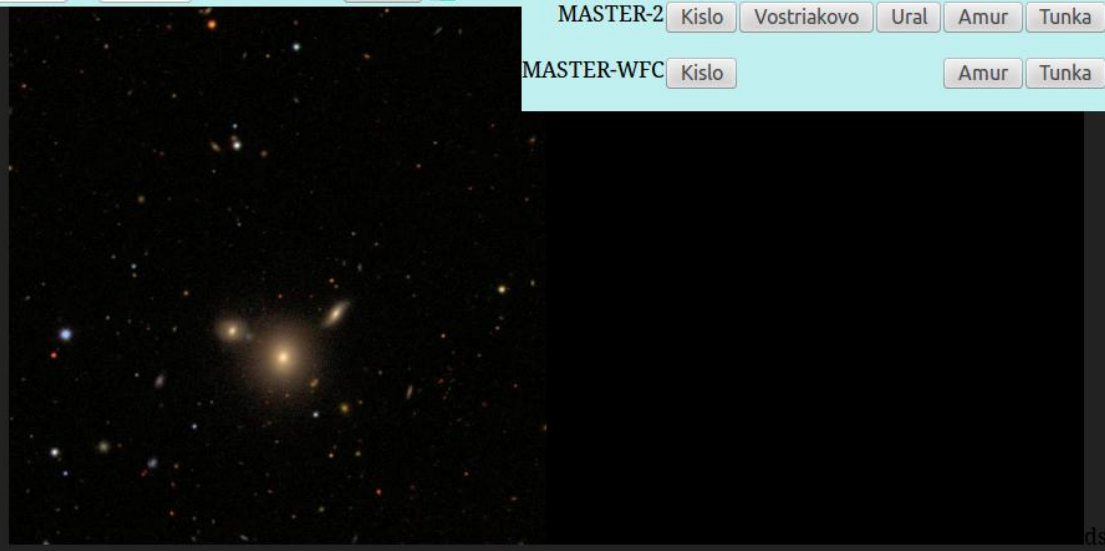
Fits name min -1 log10 Scale flipx -90 0 90 plot_cnt xc 219.5979166666 xs 0.1 skycoord xysize

/master/imdata/prodata//2012/05/ max 4.5 negative 200% flipy add_dss yc 23.34875 ys 0.1 autoflip ; Show

MASTER-2 Kislo Vostriakovo Ural Amur Tunka ESO DSS

MASTER-WFC Kislo Amur Tunka Arg





dssscale=198

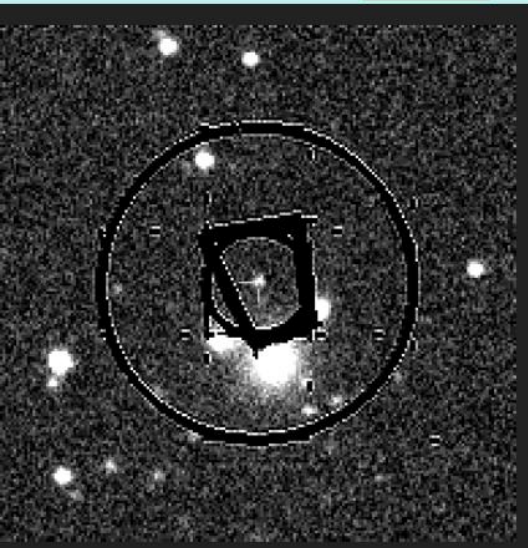
Найти: 10/09/06 Предыдущее Следующее Подсветить все Учесть регистр

MASTER-WFC :: Database - Mozilla Firefox

Файл Правка Вид Журнал Закладки Инструменты Справка

https://77.234.197.187/master2/prev3.php?umin=-1&plot_cnt=1&xc=219.597916666667&xs=0.1&skycoord=1&fits=%2Fmaster%2Fimdata%2Fprodata%2F%2F2012%2F05%2F23%2F(219.59791666667 23.34875

Fits and cat name	min	-1	log10		Scale		flipx		-90 0 90		plot_cnt	☑	xc	219.5979166666	xs	0.1	skycoord	☑	xysize	
/master/imdata/prodata//2012/05/	max	4.5	negative		200%		flipy				add_dss	☑	yc	23.34875	ys	0.1	autoflip	☑	Show	
	CatSN		ProcID		Splash		***White circle*** R(pix)								Ra_c			Dec_c		
Rectangular ErrorBox	x1	219.60791666	x2	219.58791666	x3	219.58791666	x4	219.59991666	y1	23.35875	y2	23.35975	y3	23.33975	y4	23.337	ri	2	rs	2
Two black circle	cx	219.59791666	cy	23.34875	cr	0.02	cdr	0.01	ci	2	rf	2	ra		rb		r_phi			



dssscale=198

Найти: 10/09/06 ◂ Предыдущее ▸ Следующее Подсветить все Учесть регистр

where: order by: Date&time Descending

on page: 25 Select by date: last week last month any Apply

All | Unfiltered | Defined | Filtered | Noise | Stars | Doubt | Nodoubt | Comet

Id	Name	Observed	Status	Date&time	Magnitude	Coordinates J2000	α speed	δ speed	Modified by	Controls
9637076		3	filtered	12 Aug 2012 19:31:12	19.378	22h41m20.226s,+10°59'58.441"	-80.5086	-1.13196	processing	View
9636308		3	filtered	12 Aug 2012 19:27:11	18.89	22h33m16.643s,+09°08'22.672"	30.6511	18.2233	processing	View
9632842		3	filtered	12 Aug 2012 16:31:29	16.549	17h39m01.85s,+16°58'09.998"	-24.3218	-18.6628	processing	View
9632846		3	filtered	12 Aug 2012 16:31:29	16.549	17h39m01.85s,+16°58'09.998"	-23.1236	-28.4547	processing	View
9632847		4	filtered	12 Aug 2012 16:31:29	17.247	17h39m02.26s,+16°57'18.734"	-19.5311	-58.3893	processing	View
9632848		3	filtered	12 Aug 2012 16:31:29	16.548	17h39m01.635s,+16°58'36.214"	-25.0093	-13.1468	processing	View
9632831		3	filtered	12 Aug 2012 16:31:29	17.247	17h39m02.26s,+16°57'18.734"	-18.9194	-63.2621	processing	View
9632832		4	filtered	12 Aug 2012 16:31:29	16.548	17h39m01.635s,+16°58'36.214"	-24.3975	-18.0197	processing	View
9632833		3	filtered	12 Aug 2012 16:31:29	17.327	17h39m02.051s,+16°57'44.838"	-20.1512	-52.9363	processing	View
9632834		3	filtered	12 Aug 2012 16:31:29	17.278	17h39m01.917s,+16°58'01.621"	-21.3262	-43.1361	processing	View
9632836		3	filtered	12 Aug 2012 16:31:29	17.247	17h39m02.26s,+16°57'18.734"	-18.3181	-68.179	processing	View
9632825		3	filtered	12 Aug 2012 16:31:29	17.327	17h39m02.051s,+16°57'44.838"	-18.8856	-63.3335	processing	View
9632826		3	filtered	12 Aug 2012 16:31:29	17.278	17h39m01.917s,+16°58'01.621"	-20.0607	-53.5333	processing	View
9632747		3	filtered	12 Aug 2012 16:27:37	16.523	17h39m01.961s,+16°58'12.324"	-24.2674	-17.9827	processing	View
9632751		3	filtered	12 Aug 2012 16:27:37	16.943	17h39m01.797s,+16°58'20.445"	-25.7551	-13.0545	processing	View
9632752		3	filtered	12 Aug 2012 16:27:37	16.523	17h39m01.961s,+16°58'12.324"	-23.0223	-28.1581	processing	View
9632754		4	filtered	12 Aug 2012 16:27:37	17.26	17h39m02.373s,+16°57'21.042"	-19.2695	-59.2761	processing	View
9632755		3	filtered	12 Aug 2012 16:27:37	16.566	17h39m01.749s,+16°58'38.482"	-24.9513	-12.2857	processing	View
9632756		3	filtered	12 Aug 2012 16:27:37	16.943	17h39m01.797s,+16°58'20.445"	-24.51	-23.23	processing	View
9632725		3	filtered	12 Aug 2012 16:27:37	17.211	17h39m02.03s,+16°58'03.918"	-19.8133	-54.2366	processing	View
9632726		3	filtered	12 Aug 2012 16:27:37	17.323	17h39m02.164s,+16°57'47.138"	-18.5987	-64.4184	processing	View
9632736		3	filtered	12 Aug 2012 16:27:37	16.943	17h39m01.797s,+16°58'20.445"	-23.8743	-28.2936	processing	View
9632738		3	filtered	12 Aug 2012 16:27:37	17.211	17h39m02.03s,+16°58'03.918"	-21.1284	-43.4321	processing	View
9632739		3	filtered	12 Aug 2012 16:27:37	17.323	17h39m02.164s,+16°57'47.138"	-19.9138	-53.6139	processing	View
9632741		3	filtered	12 Aug 2012 16:27:37	17.26	17h39m02.373s,+16°57'21.042"	-18.0089	-69.4493	processing	View

open all in new tabs

< 1 2 3 >

Request completed in 1.023s

```
select ascnd.id, asnumb.name, ascnd.n_observ, ascnd.as_status, ascnd.datetime, ascnd.mag, long(ascnd.coord2000) as ra,lat(ascnd.coord2000) as dec , ascnd.speed_ra, ascnd.speed_dec, users.name as username,users.firstname,users.lastname from ascnd left join users on (users.id=get_user_ast(ascnd.id)) left join asnumb on asnumb.id=ascnd.number where as_status=2 and datetime > now() - interval '1 week' order by datetime desc offset 0 limit 25 ;
```

Transient telegram composer - Master Tunka - Mozilla Firefox

V. Yurkov, Y. Sergienko, D. Varda, E. Sinyakov (Blagoveshchensk Educational University)
V. Shumkov, S. Shurpakov (MASTER team members)

MASTER-Tunka auto-detection system discovered OT source at (RA, Dec) = 14h 38m 23.50s +23d 20m 55.5s on 2012-05-23.71086 UT.
The OT unfiltered magnitude is 17.9m (limit 20.0m).

The OT is seen in 6 images. There is no minor planet at this place.

We have reference image without OT on 2012-04-11.78103 UT with unfiltered magnitude limit 19.5m.

Spectral observations are required.

Внимание! Ко всем пределам прибавляется 0.5^m

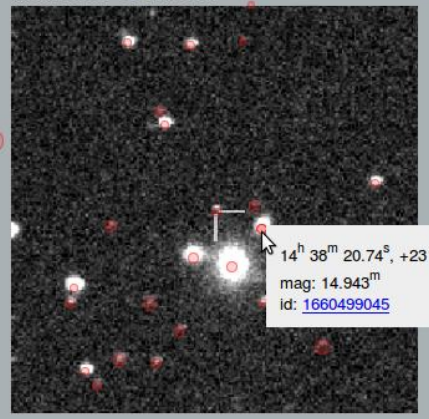
Text1: MASTER OT discovery unfiltered image at 2012-05-23.71086 m_OT = 17.9, m_limit = 20.0

Text2: MASTER OT unfiltered image at 2012-05-23.66861 m_OT = 17.6, m_limit = 19.9

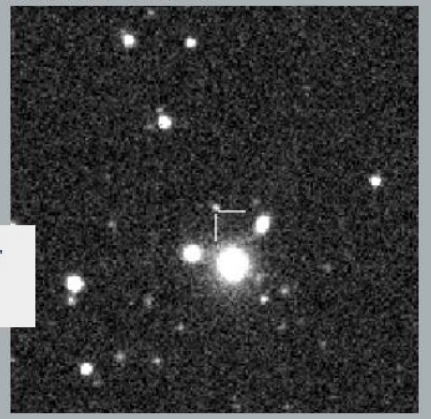
Text3: MASTER OT reference unfiltered image at 2012-04-11.78103 m_limit = 19.5

Submit

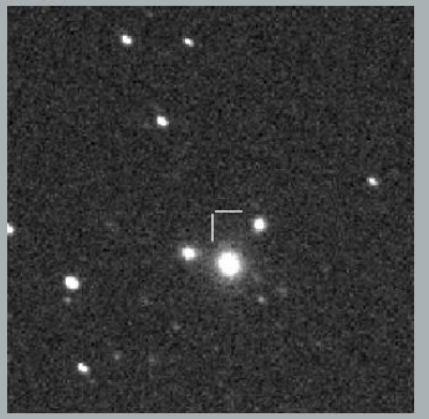
$14^h\,38^m\,20.78^s, +23°\,20'\,22.4''$ hms dms
X: 1229.43 Y: 2046.53



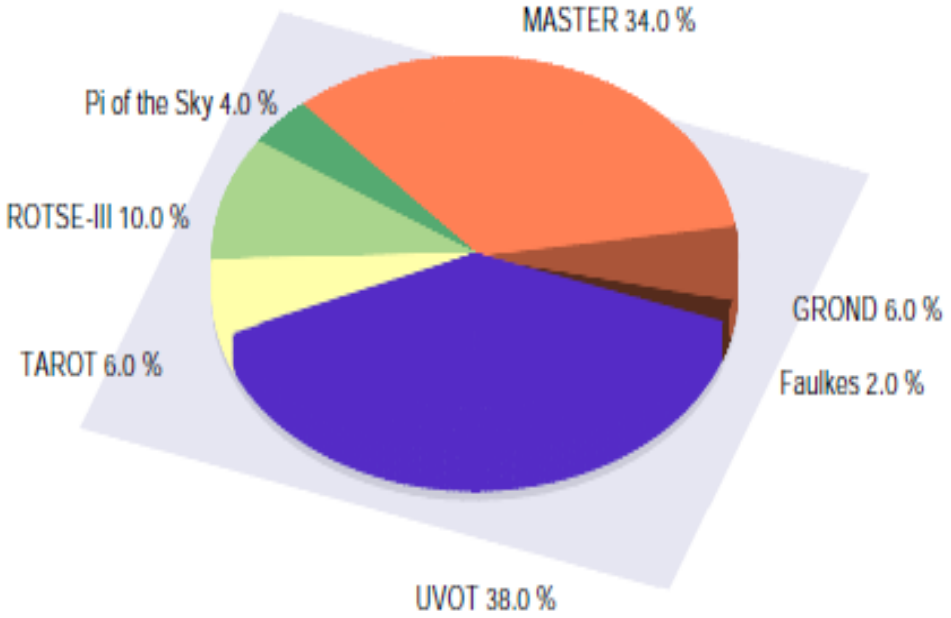
$14^h\,38^m\,34.32^s, +23°\,22'\,58.9''$ hms dms
X: 1327.33 Y: 1983.89

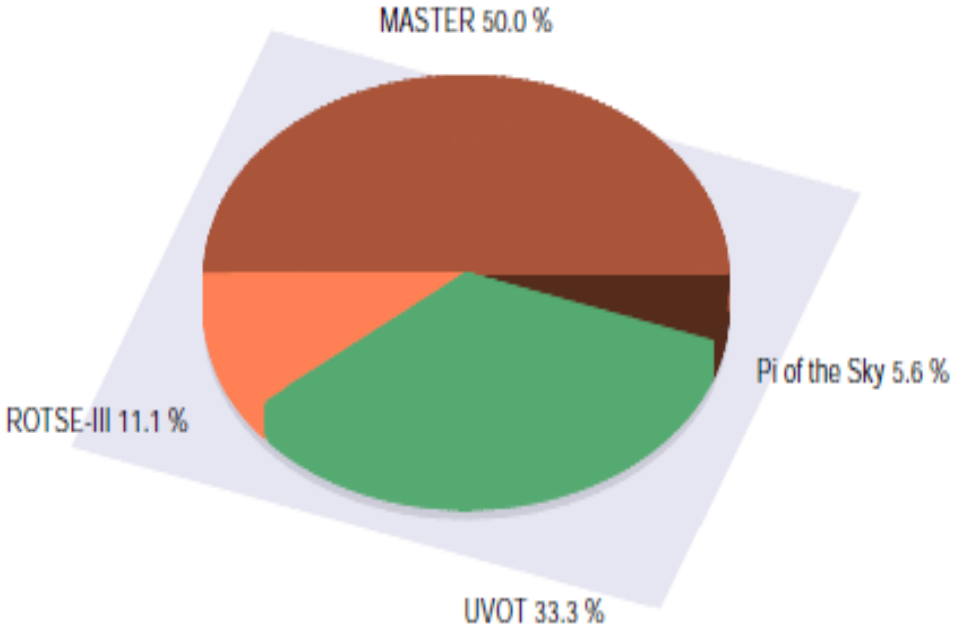


, hms dms
X: Y:



GRB pointing statistic
2010-2011 winter time





First pointing

Prompt pointing

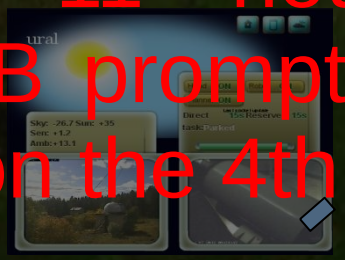
Рис. 5: Относительная доля первых и prompt наведений на гамма-всплески после введения в строй всех телескопов сети МАСТЕР с 01 сентября 2010 г по настоящее время (июнь 2011)

Two continuous MASTER-net GRB observations in September 2010:

Gorbovskoy, E. S. et al.,MN RAS, V. p. 2580, 2012

GRB100901A

Total: More than 11 hours of the continuous observations of GRB prompt and afterglow emission, since 101 seconds on the 4th uniform observatories



Ученые МГУ и космичес
исследования 2009

GRB100901A: Multifilter light curve

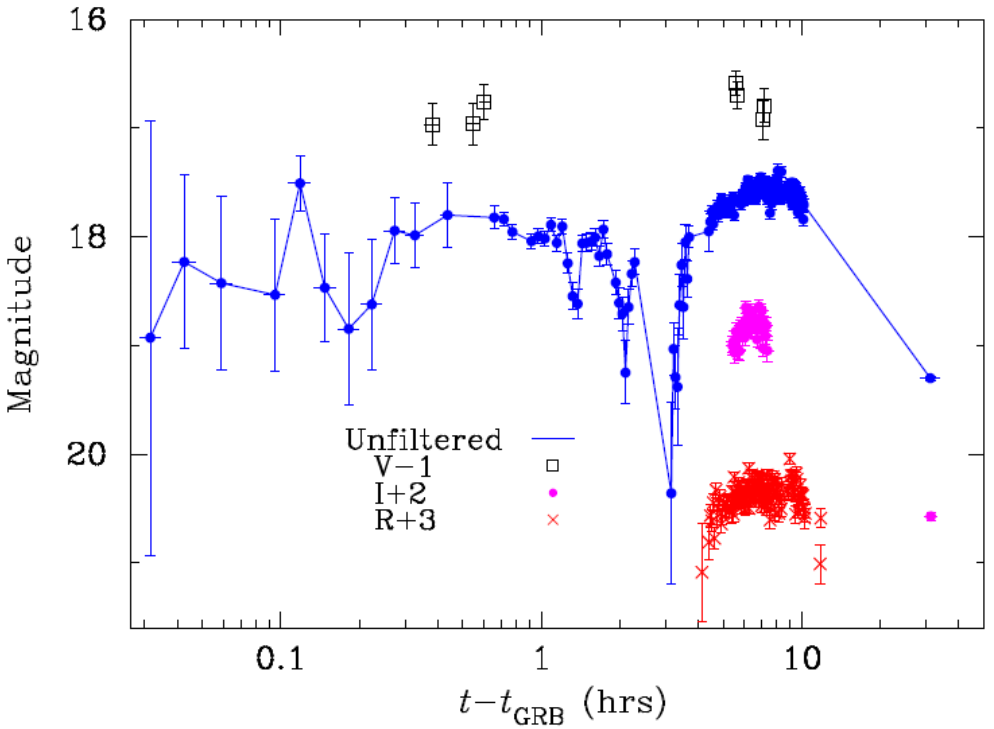
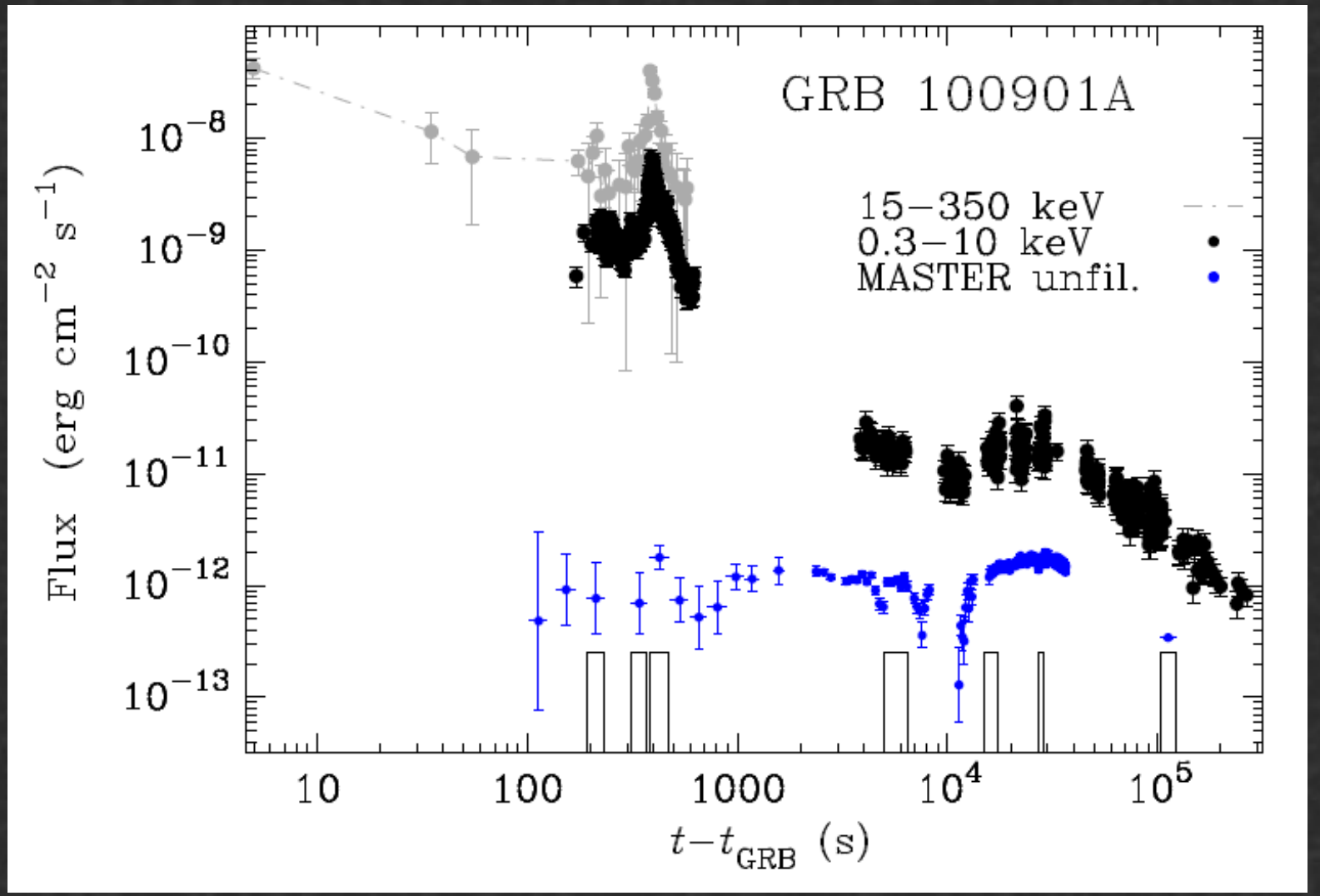


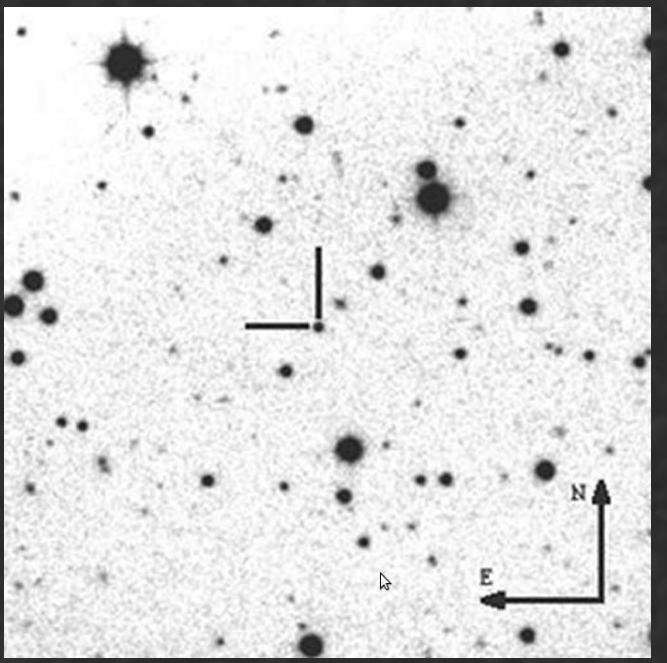
Figure 2. MASTER optical light curves of GRB 100901A in different filters: R (3 mag added; red crosses), I (2 mag added; magenta dots), V (1 mag subtracted; black squares), and unfiltered (blue dots connected with solid line). Magnitudes are not corrected for the Galactic extinction. Horizontal bars show exposures.

arXiv e-print (arXiv:1111.3625)

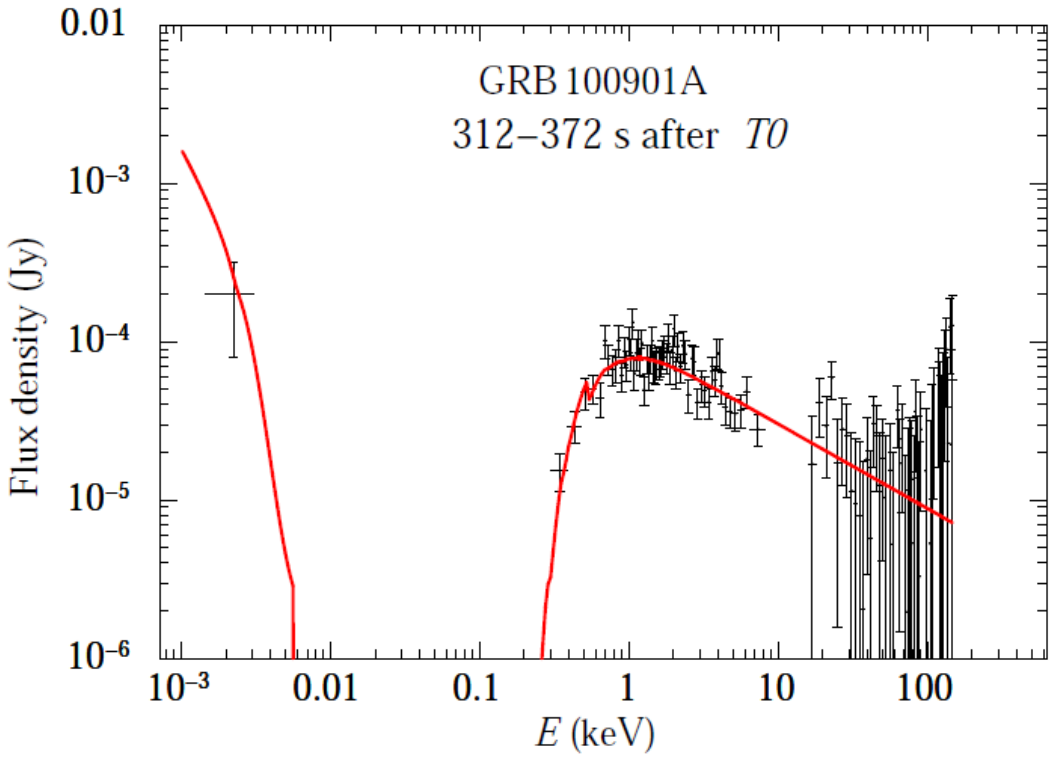
GRB100901A: Gorbovskoy, E. S. et al.,MN RAS, V. p. 2580, 2012



gcn11178



GRB100901A: Spectral evolution



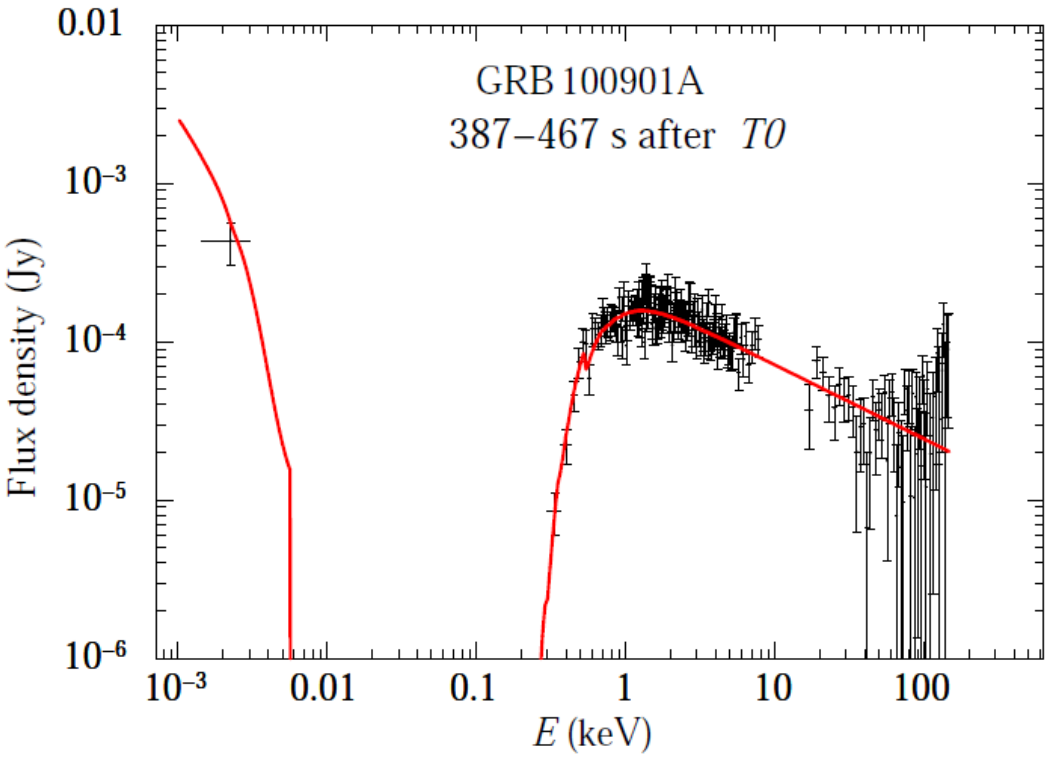


Figure 7. Spectrum of GRB 100901A for two time intervals at $t \lesssim T_{90}$. Optical flux density obtained by MASTER, corrected for the Galactic extinction $A_V = 0.327$ (NED; Schlegel, Finkbeiner & Davis 1998), is shown by the single left point, whose horizontal bar corresponds to the MASTER unfiltered effective frequency interval. Spectra in 0.3–10 and 15–150 keV are made with the *Swift* BAT and XRT data. Best-fitting absorbed power laws are shown by the red lines. Their spectral parameters are described in Table 10 as Fit 100901.2 for 312 − 372 s and Fit 100901.3, for 387 − 467 s).

arXiv e-print (arXiv:1111.3625)

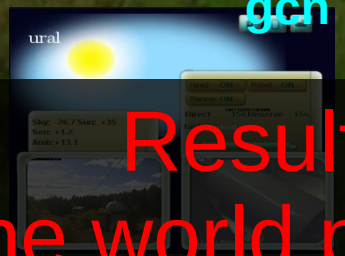
Two continuous MASTER-net GRB observations in September 2010:

Gorbovskoy, E. S. et al.,MN RAS, V. p. 2580, 2012

GRB100906A

(gcn11214)

23 s after notice time
38 s after trigger time
gcn 11228

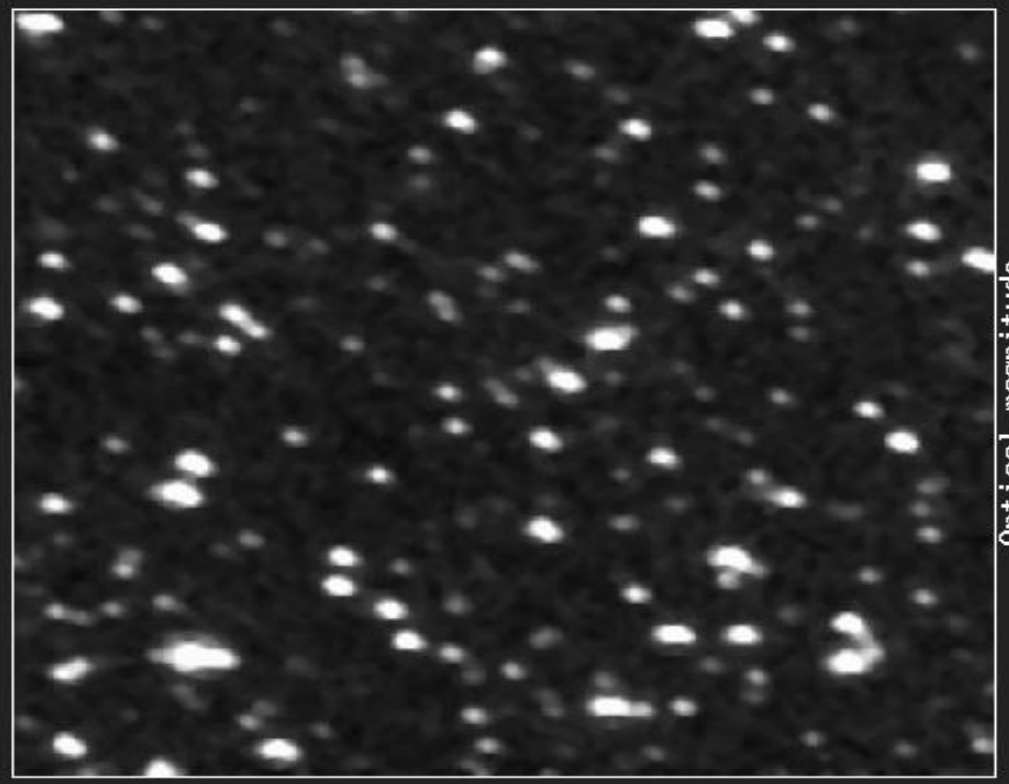


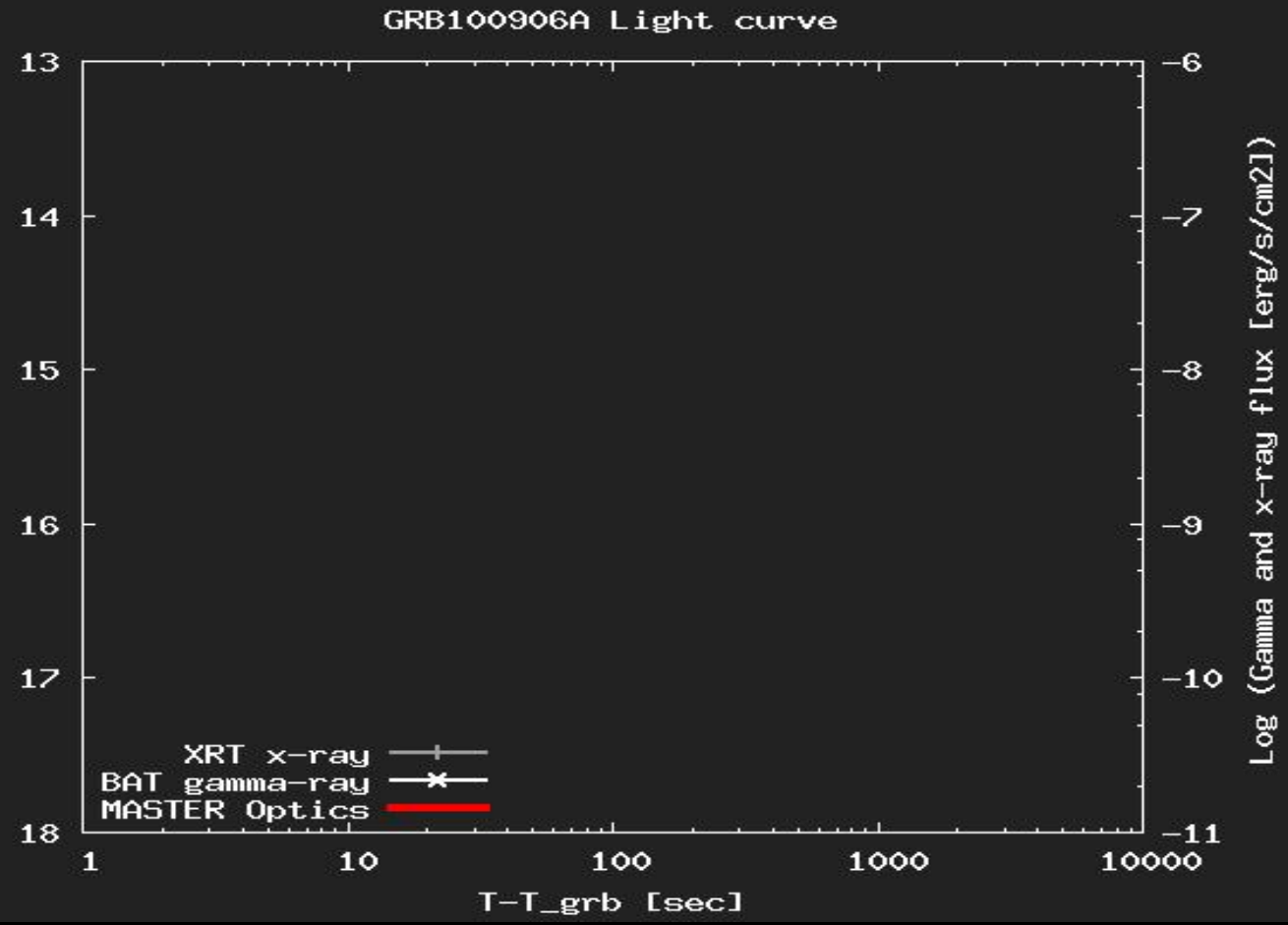
Result:

For the first time in the world polarizing images of GRB prompt emission are received

Ученые МГУ и космичес
исследования 2009

First-ever synchronous polarizing observations of GRB (September 6, 2010, the robotized MASTER network)





At the left – optical flash – distance about 10 billions light years.
On the right: the white – gamma emission, gray – x-ray radiation, red – optical

GRB100906A: The burst from the textbook.

MASTER Tunka prompt observations

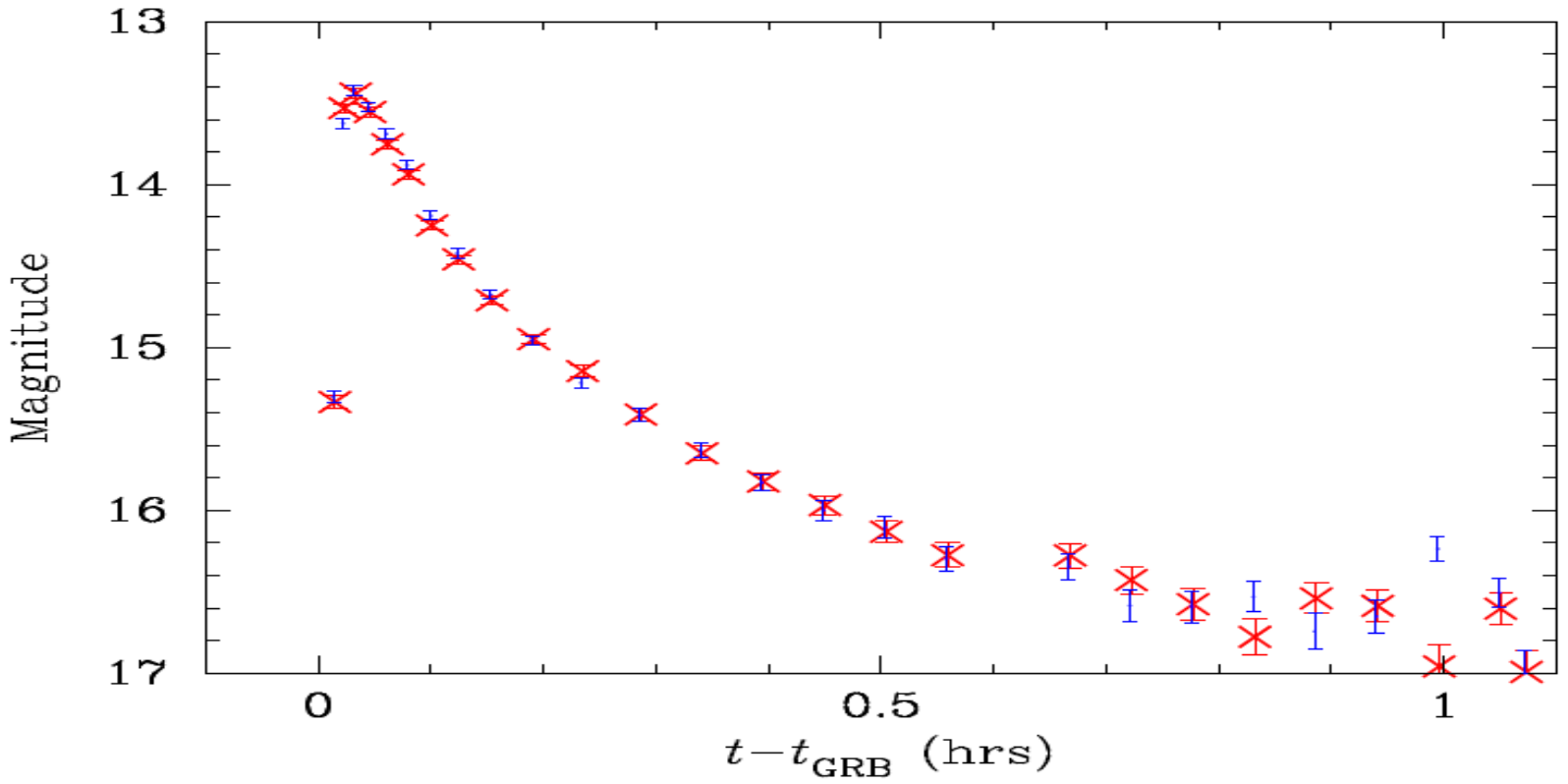


Figure 4. MASTER light curve of GRB 100901A in two polarizations, unfiltered band (blue dots and red crosses). Data are not corrected for the Galactic extinction.

GRB100906A: The burst from the textbook.

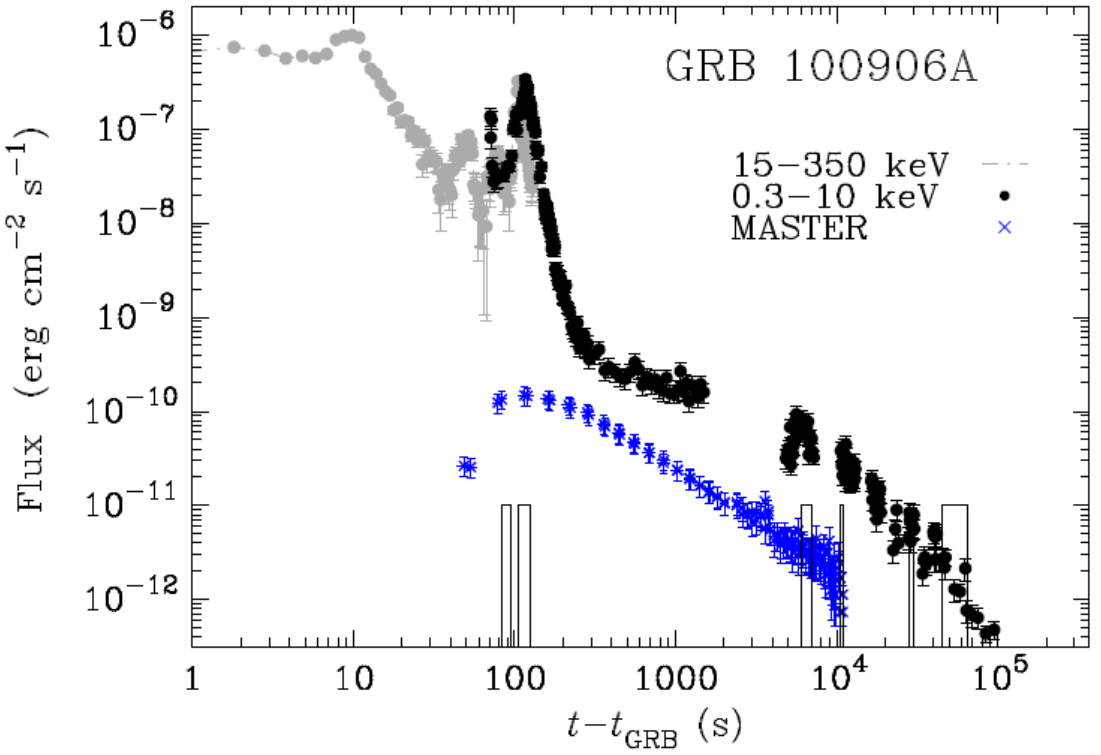
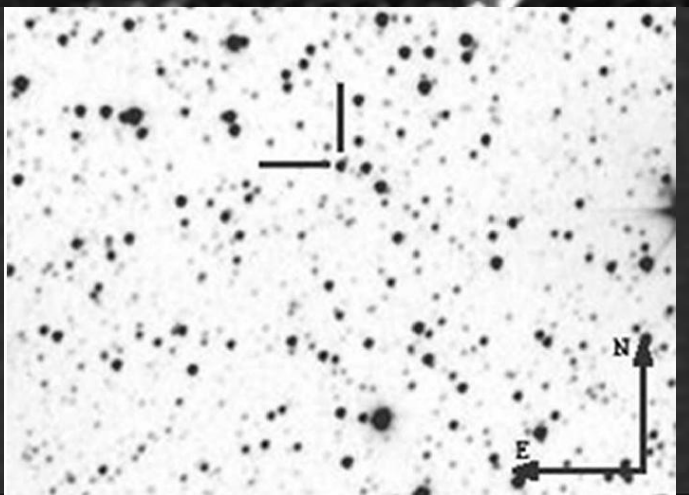


Figure 3. GRB 100906A optical light curve obtained by MASTER with one polarization filter (blue dots with 20 per cent error bars resulted due to uncertainty of magnitude-flux conversion, see § 3.2; data are corrected for the Galactic extinction) along with the *Swift*/BAT 15-350 keV flux with 1 s binning (grey dots connected with dot-dashed line; data with negative lower limits are not shown) and the *Swift*/XRT 0.3-10 keV unabsorbed-flux light curve (black dots; Beardmore & Markwardt 2010). Thin-line rectangles show the time intervals selected for spectral analysis.

MASTER Tunka prompt observations



GRB100906A:

The polarization less than 2%

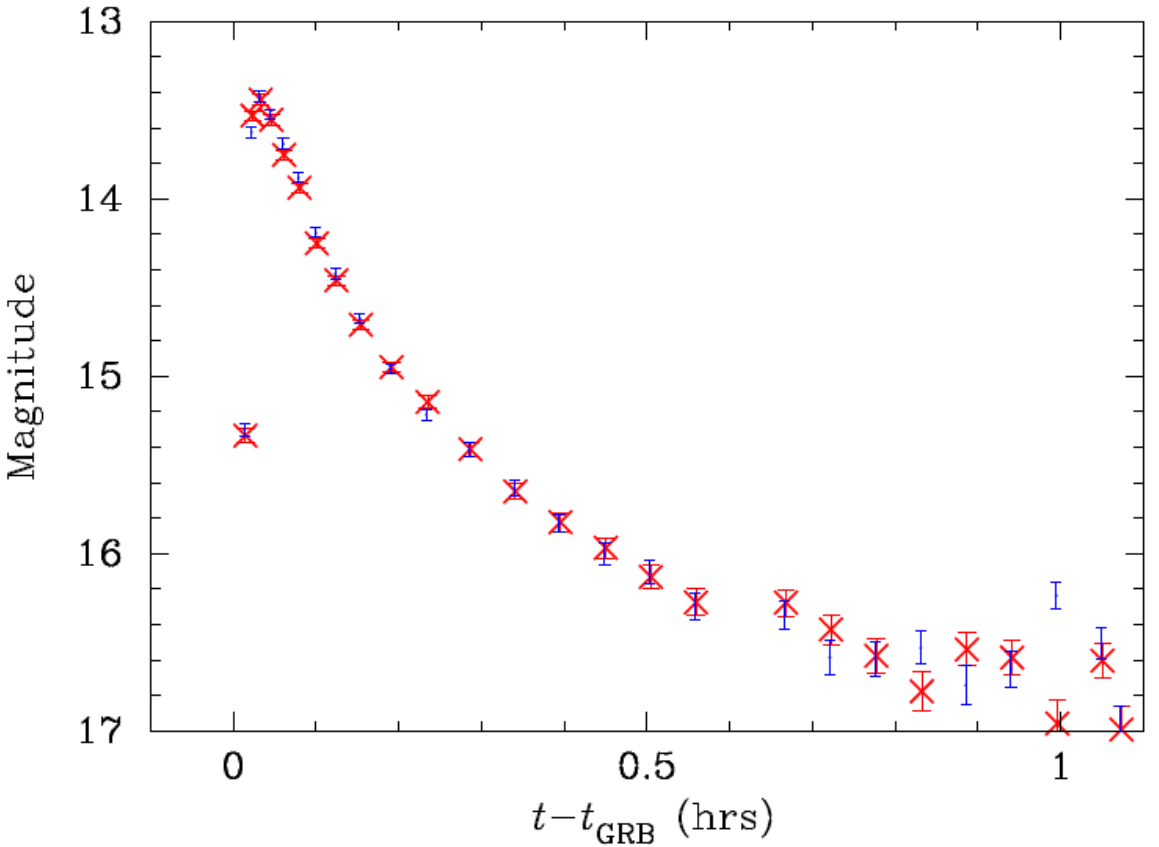


Figure 4. MASTER light curve of GRB 100901A in two polarizations, unfiltered band (blue dots and red crosses). Data are not corrected for the Galactic extinction.

GRB100906A: Spectral evolution

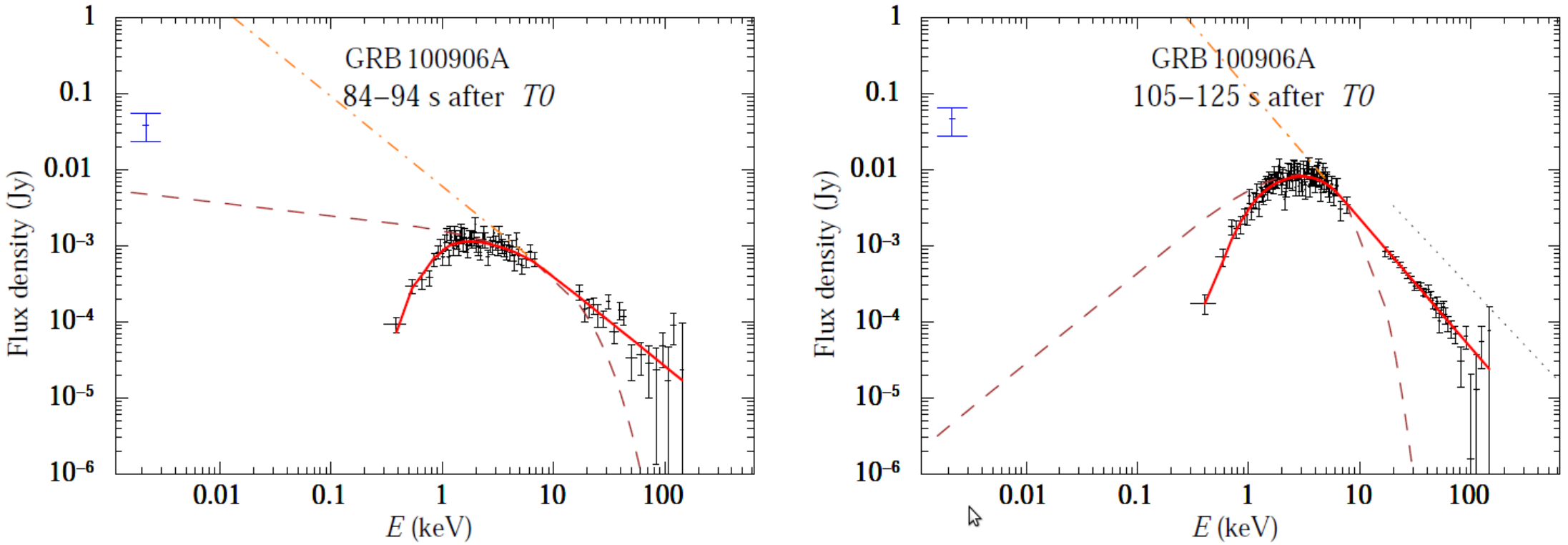


Figure 8. Spectrum of GRB 100906A for two time intervals at $t \lesssim T_{90}$. Optical points are corrected for the Galactic extinction $A_V = 1.194$ (NED; Schlegel, Finkbeiner & Davis 1998). In the left panel, we use the MASTER observation at 73.8–83.8 s. Best-fitting absorbed Band functions are shown by the red lines (Fit 100906.1 and 100906.2 in Table 10). No attempt has been made to estimate the optical extinction in the GRB host galaxy. The brown dashed line depicts the unabsorbed low-energy part, and the orange dot-dashed line, the unabsorbed high-energy part. Dotted power law represents observations of Konus–*Wind* from 98.304 to 122.880 s in 20 keV-2 MeV with a correct slope and a roughly estimated flux.

GRB100906A: Спектральная эволюция

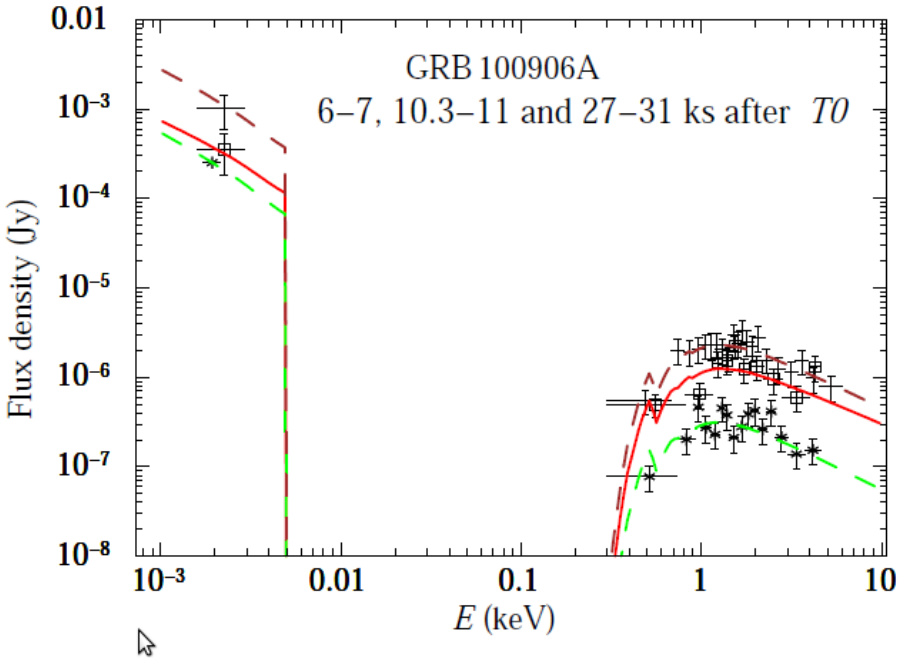


Figure 9. Spectral distributions of GRB 100906A at three time intervals: 6000-7000, 10500–11000 and 28000-30400 s (points, squares and crosses with bars, respectively). The optical data are: the MASTER $P = 17.54 \pm 0.05$ for $6000-7000$ s, $P = 18.7 \pm 0.3$ for $10500-11000$ s and OSN $R = 18.70 \pm 0.02$ for for $28000-30400$ s, additionally corrected for the Galactic extinction $A_V = 1.194$ and $A_R = 0.963$ (NED; Schlegel, Finkbeiner & Davis 1998). Lines show the best-fitting absorbed power laws, whose parameters are listed as Fit 100906.3 in Table 13.

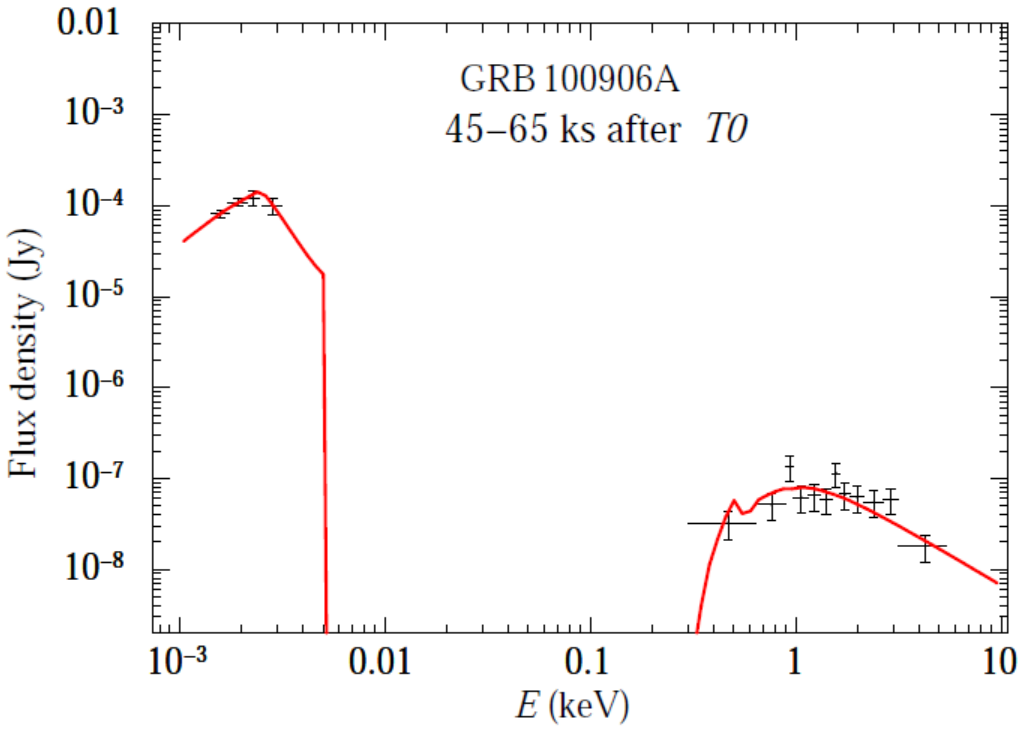
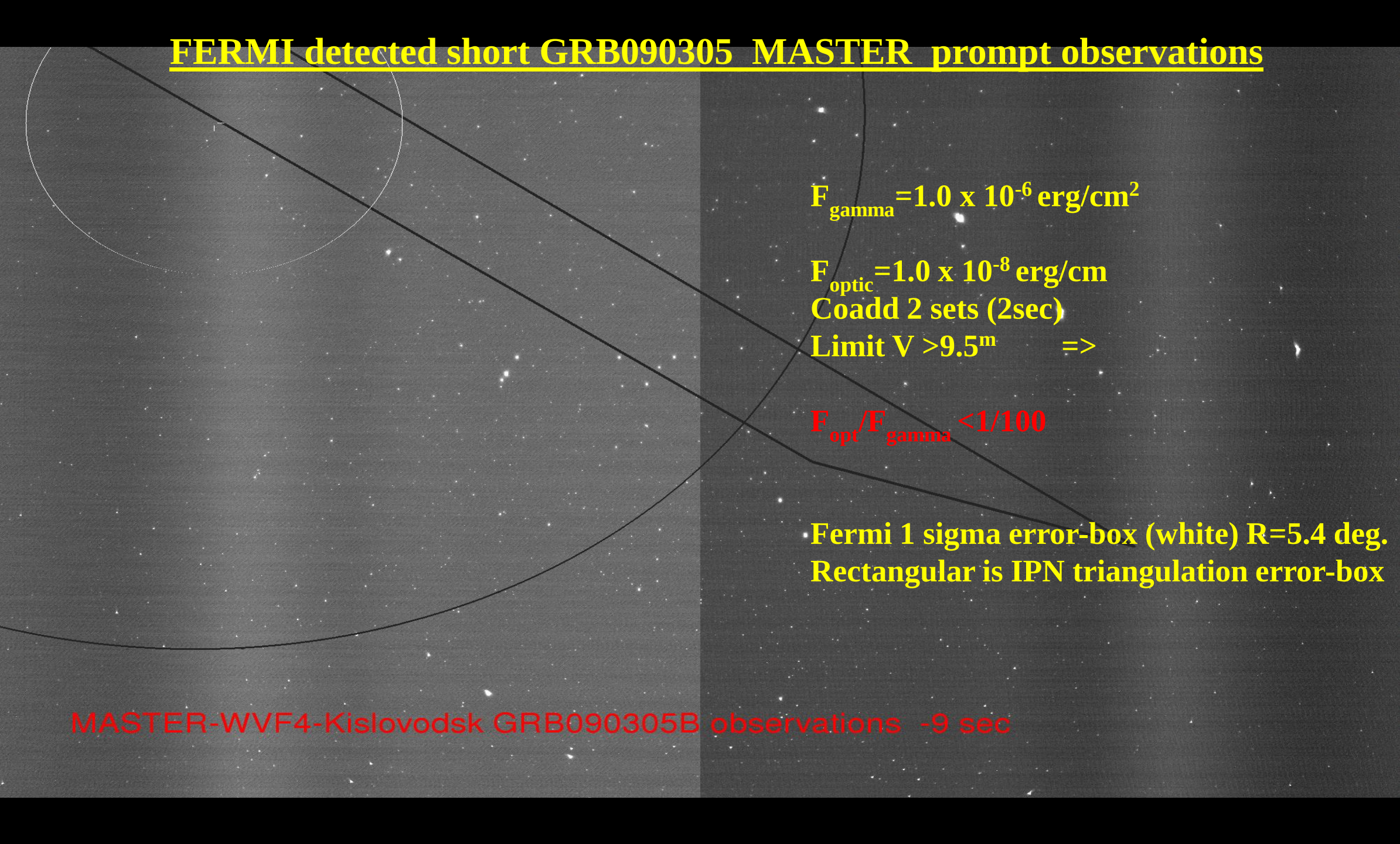


Figure 10. Spectrum of GRB 100906A compiled from the XRT data in the interval 45–65 ks and optical $BVIR$ observations obtained by OSN around 14 h after the trigger (in the interval 50.9–54.0 ks) and corrected for the Galactic extinction. Solid line is the best-fitting absorbed broken power law model, whose parameters are listed as Fit 100906.4 in Table 13.

FERMI detected short GRB090305 MASTER prompt observations



F_{gamma}=1.0 x 10^{-6} erg/cm^2

F_{optic}=1.0 x 10^{-8} erg/cm
Coadd 2 sets (2sec)
Limit V >9.5^m =>

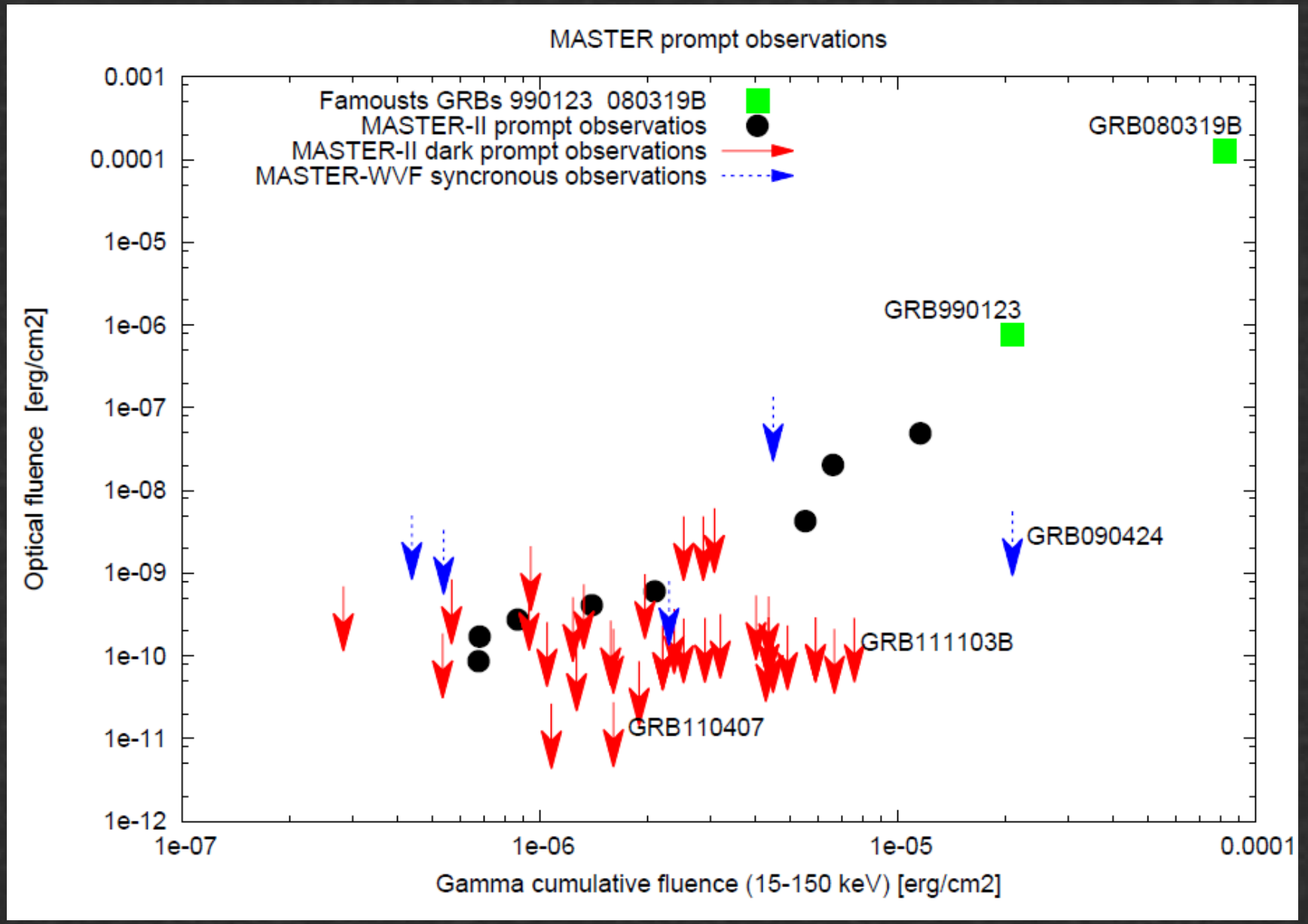
F_{opt}/F_{gamma} <1/100

Fermi 1 sigma error-box (white) R=5.4 deg.
Rectangular is IPN triangulation error-box

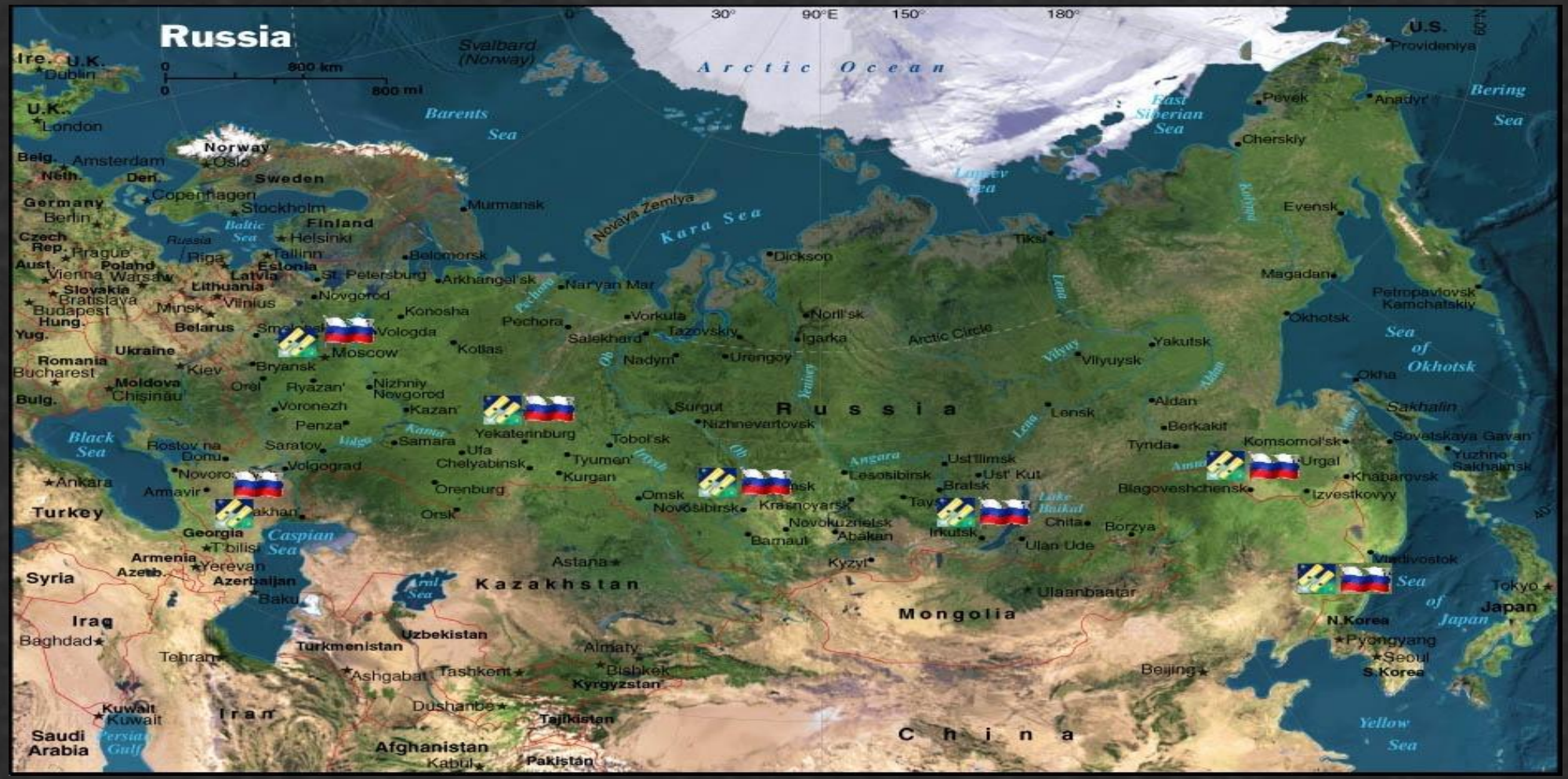
MASTER-WVF4-Kislovodsk GRB090305B observations -9 sec


MASTER robotic telescope
GRB051103 error box
2005-11-05
2.43 days after GRB Time
The real image at
http://observ.pereplet.ru/images/GRB051103.4/sum36_real.jpg
M82
M81
PGC028505
PGC2719634

MASTER WFC GRB prompt observations



MASTER SYNOPTIC SKY SURVEY
(up to 20-21 m)



Information Flow

MASTER II 4x15Gb = 60Gb/ночь

МАСТЕР VWF

12 x950 Gb/night =10Tb/ночь

Synoptic Telescope Theorem

If you design synoptic telescope with diameter

D,

You must have spectral telescope with diameter

~10 D.

System MASTER possibilities

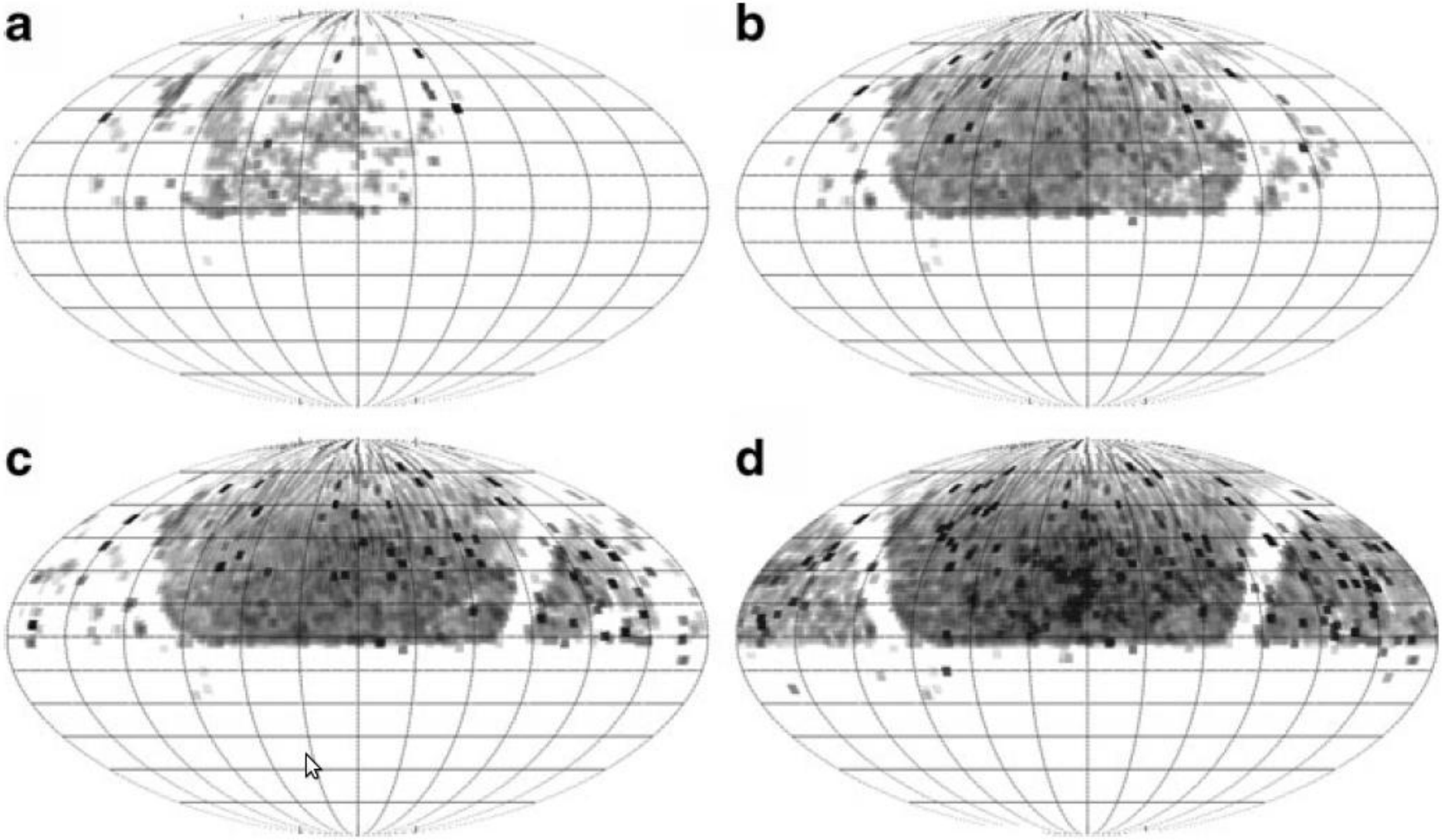


Fig. 11 The map of observations performed at MASTER-TUNKA node: **a**—after 30 days from the site start-up, **b**—after 90 days, **c**—after 180 days and **d**—after a year

System MASTER possibilities

Table 3 The number of acquired images and the accumulated exposure in the MASTER network observatories as for the 2011, mid-March

Site	Surveys		Alerts	
	N	*E*, min	*N*	*E*, min
MASTER-URAL	30,561	76,928	1,941	4,713
MASTER-TUNKA	27,688	59,900	1,124	2,465
MASTER-AMUR	53,088	64,960	3,696	3,825
MASTER-KISLOVODSK	63,214	179,850	6,131	17,500

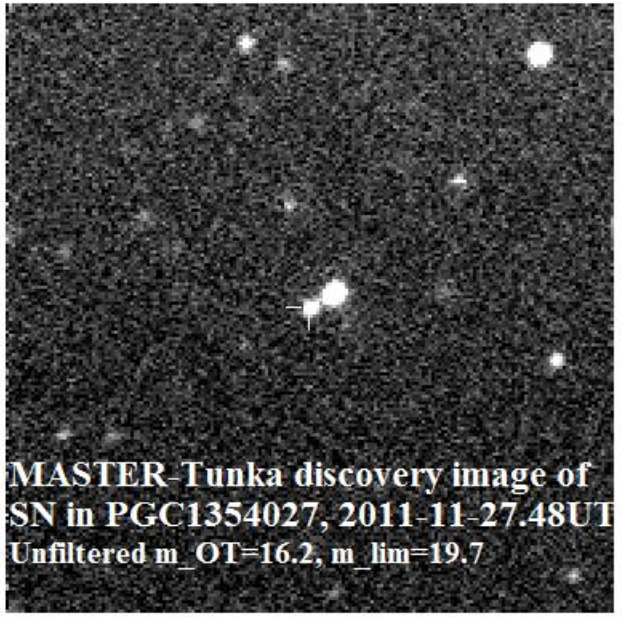
Optical transients:

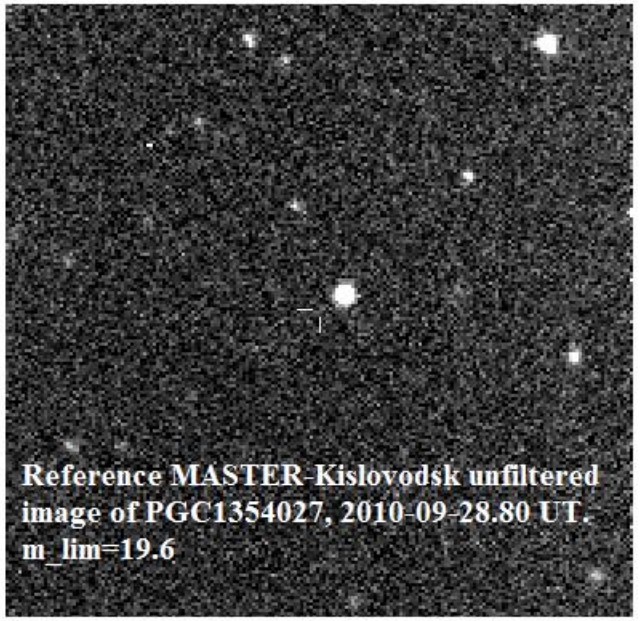
1) Supernova stars
2) Nova stars
3) Dwarf nova and CV.
4) Orphans GRBs
5) Variable stars
6) Unknown nature astrophysical transients

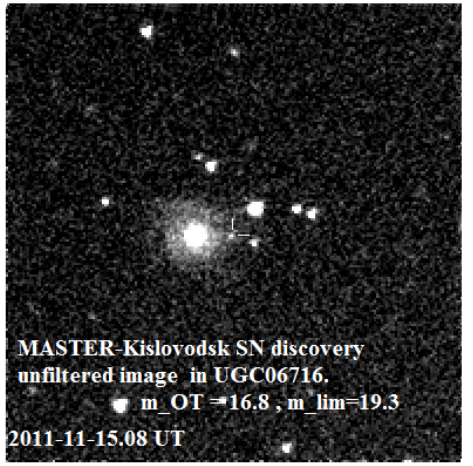
7) Asteroids, NEO, Comet, Transneptun asteroids.

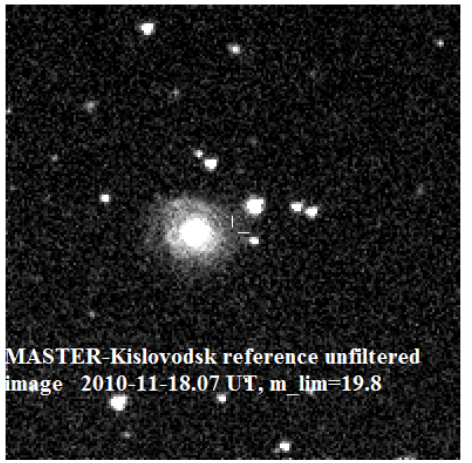
8) Meteors, Satellites, Space debris Метеоры

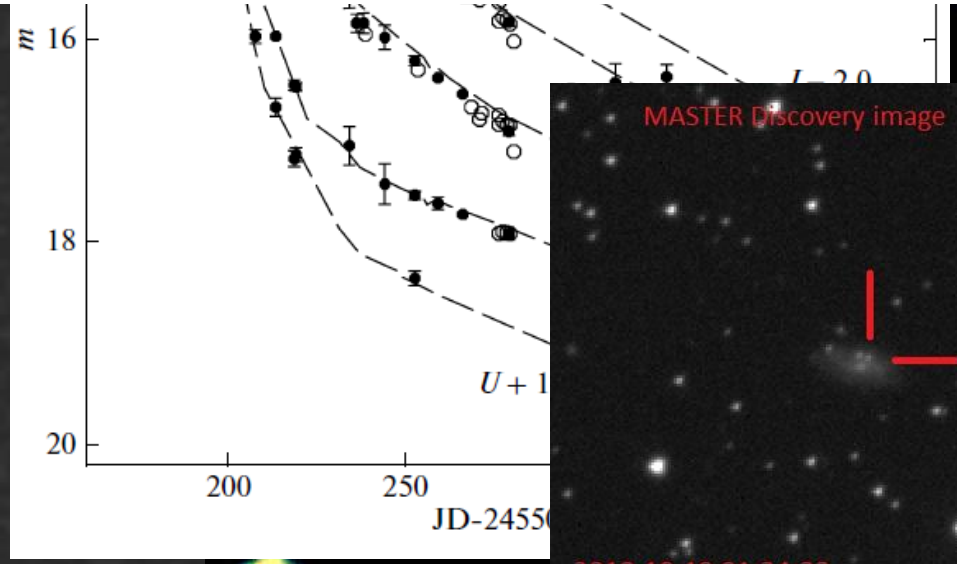
Supernova stars:

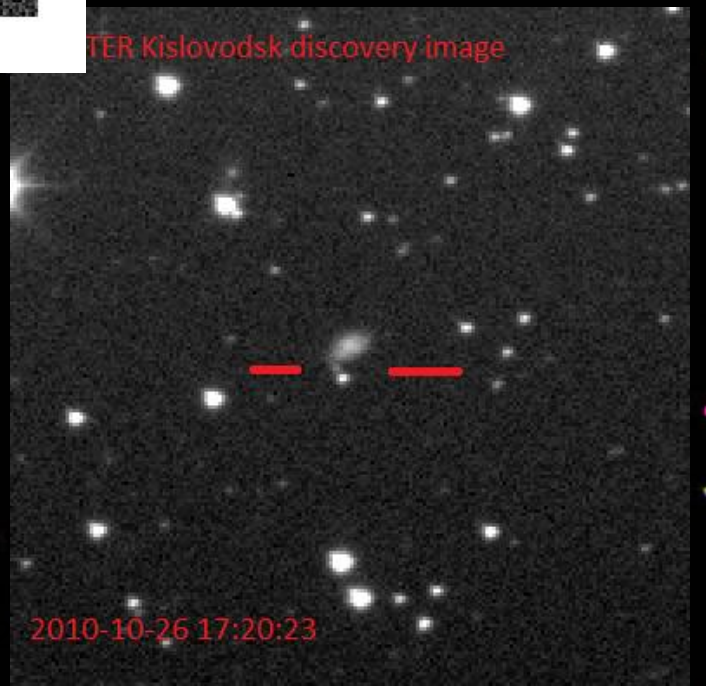

MASTER-Tunka discovery image of SN in PGC1354027, 2011-11-27.48UT
Unfiltered m_OT=16.2, m_lim=19.7


Reference MASTER-Kislovodsk unfiltered image of PGC1354027, 2010-09-28.80 UT.
m_lim=19.6


MASTER-Kislovodsk SN discovery unfiltered image in UGC06716.
m_OT =16.8 , m_lim=19.3
2011-11-15.08 UT

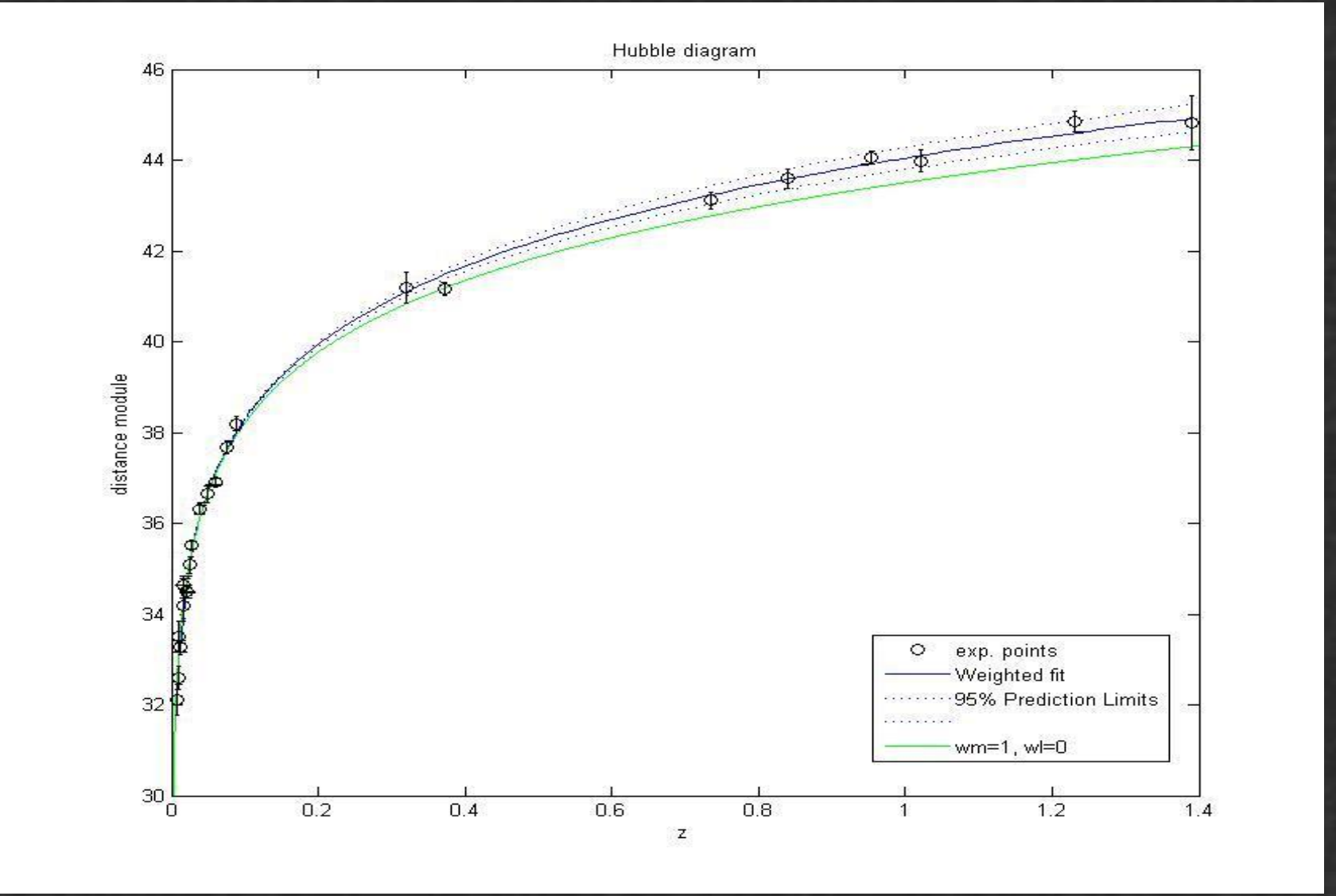

MASTER-Kislovodsk reference unfiltered image 2010-11-18.07 UT, m_lim=19.8



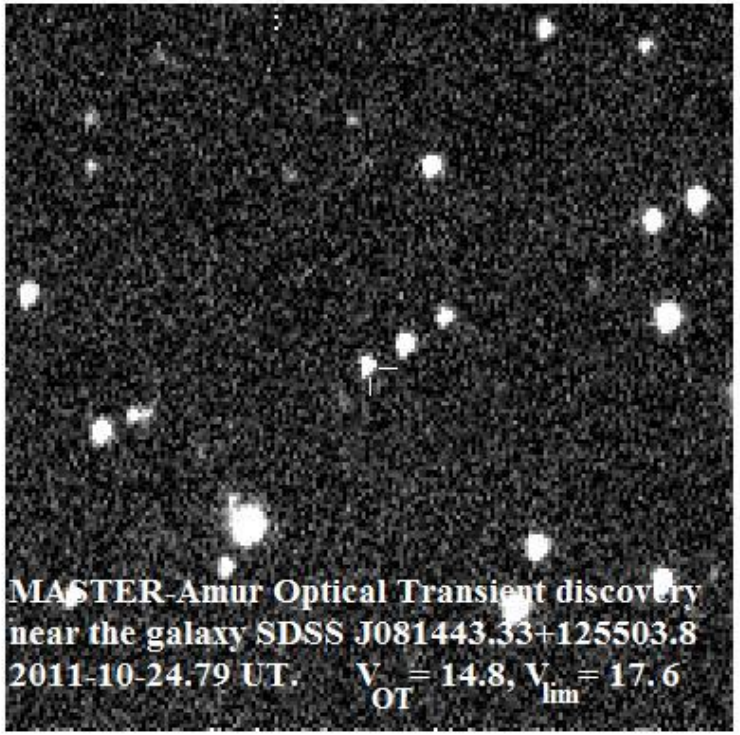


Hubble diagram, «Pure SN» Pruzghinskaya et al. (Astronomy Letters , 2011)

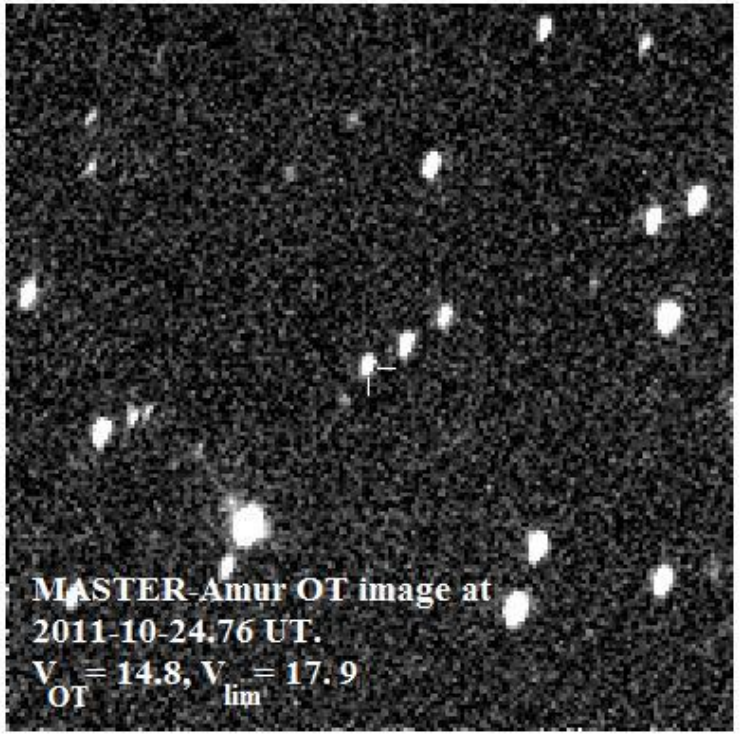
$$\Omega_\Lambda = 0.65 \pm 0.20$$



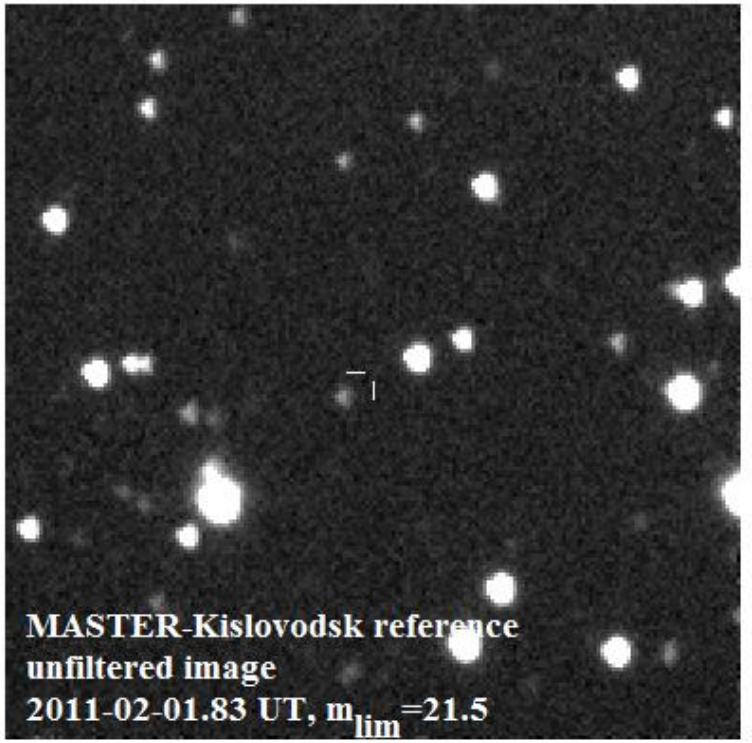
Novae and Dwarf novae: Star flashed with 22 to 14 magnitudes



MASTER-Amur Optical Transient discovery near the galaxy SDSS J081443.33+125503.8 2011-10-24.79 UT. V_{OT} = 14.8, V_{lim} = 17.6

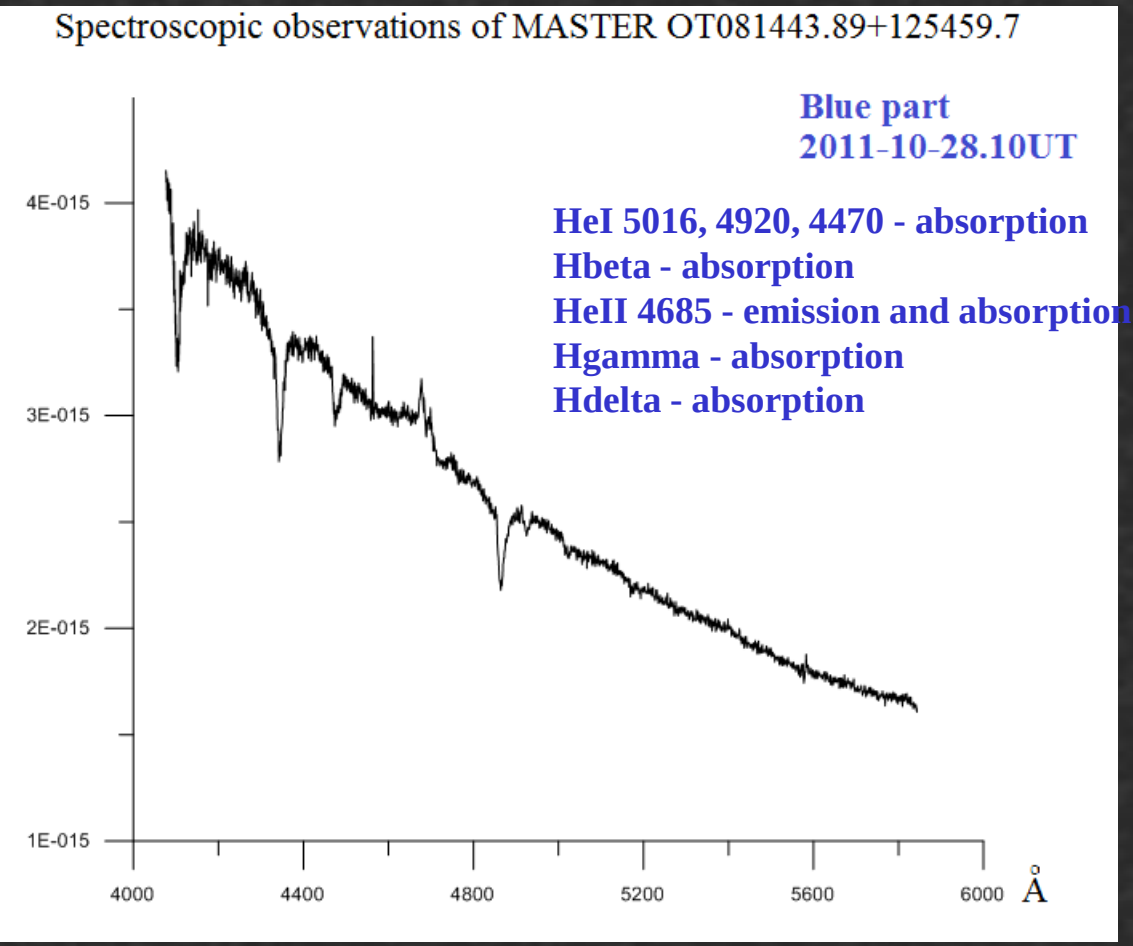


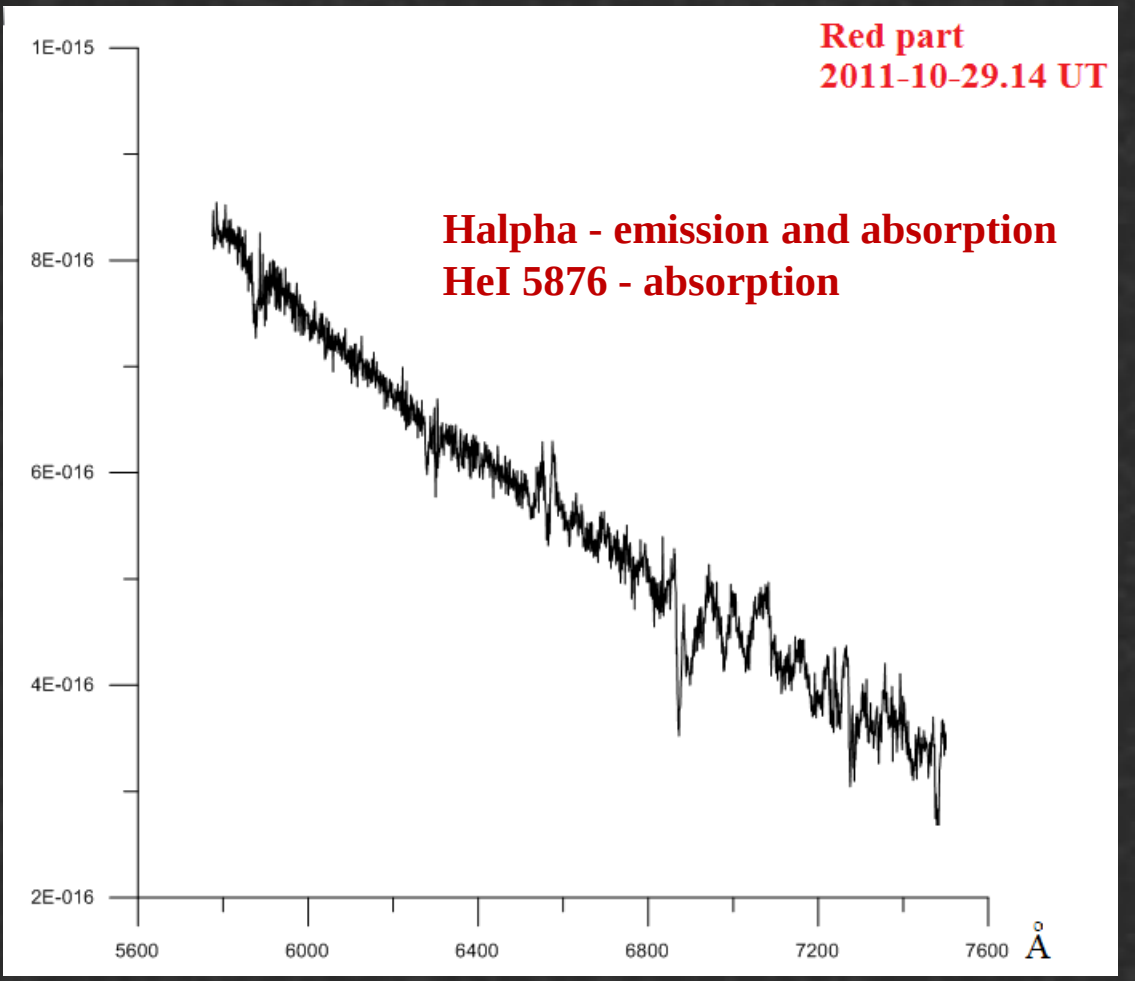
MASTER-Amur OT image at 2011-10-24.76 UT. V_{OT} = 14.8, V_{lim} = 17.9



MASTER-Kislovodsk reference unfiltered image 2011-02-01.83 UT, m_{lim}=21.5

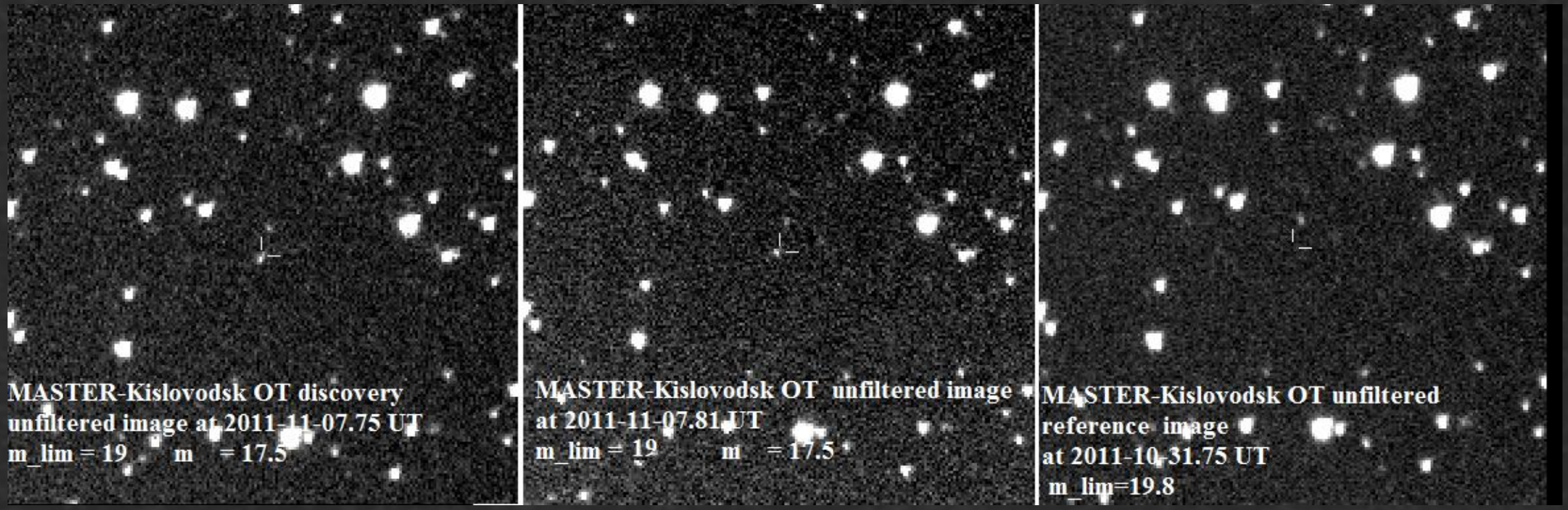
OT: Star flashed with 22 to 14 magnitudes



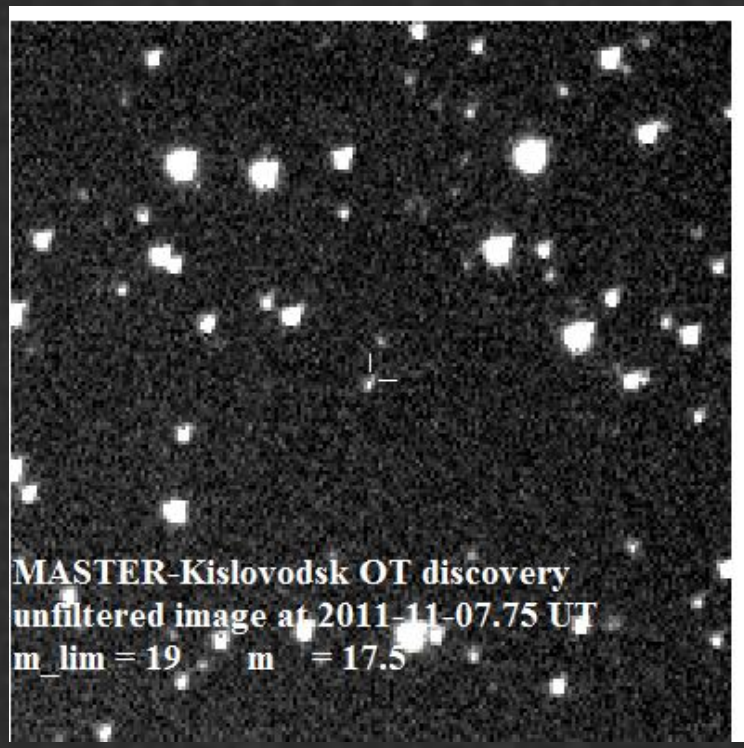


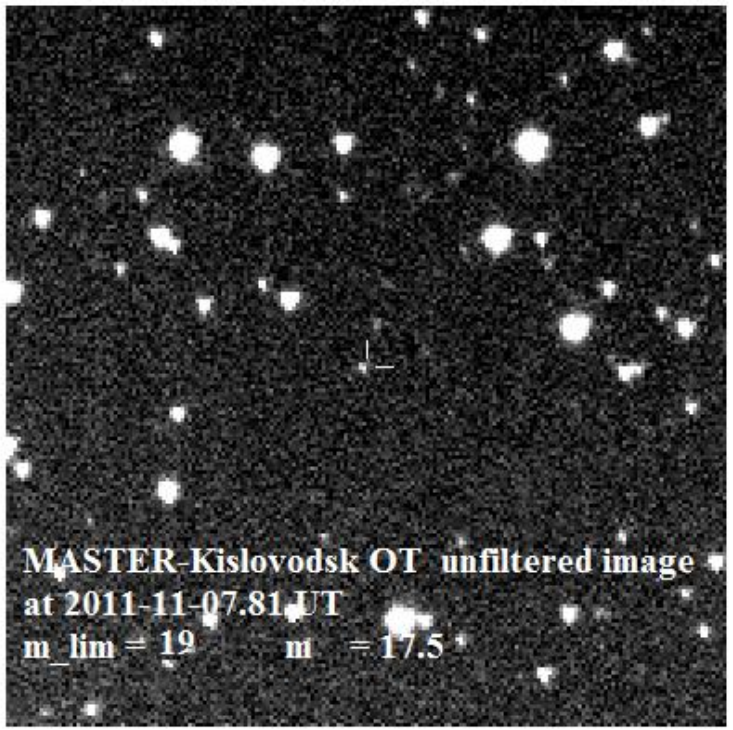
Atel 3730 , 3715 , 3724

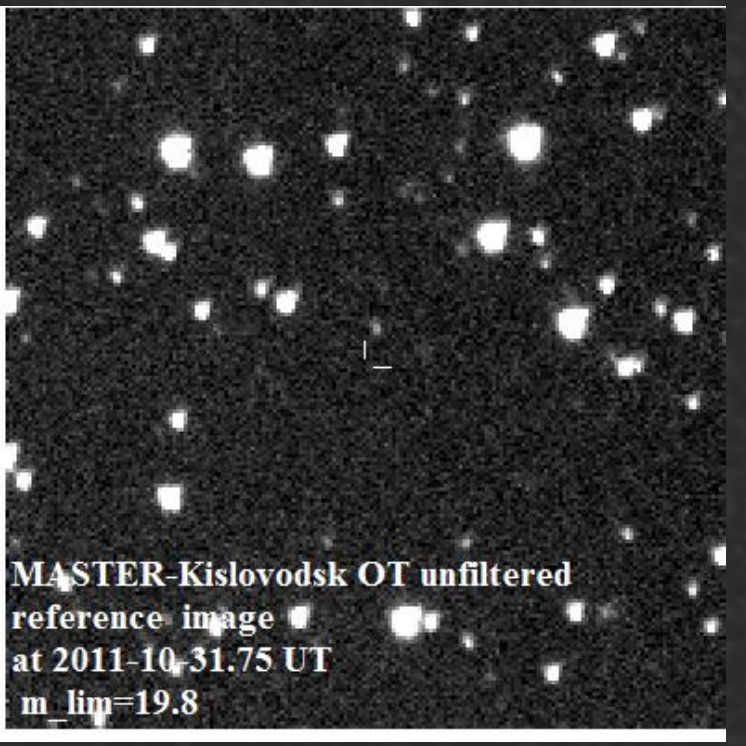
NOVA V965 PERSEI = NOVA PERSEI 2011
Atel #3746 , IAU Circ 9247



Optical transients: CVs







Atel 3747

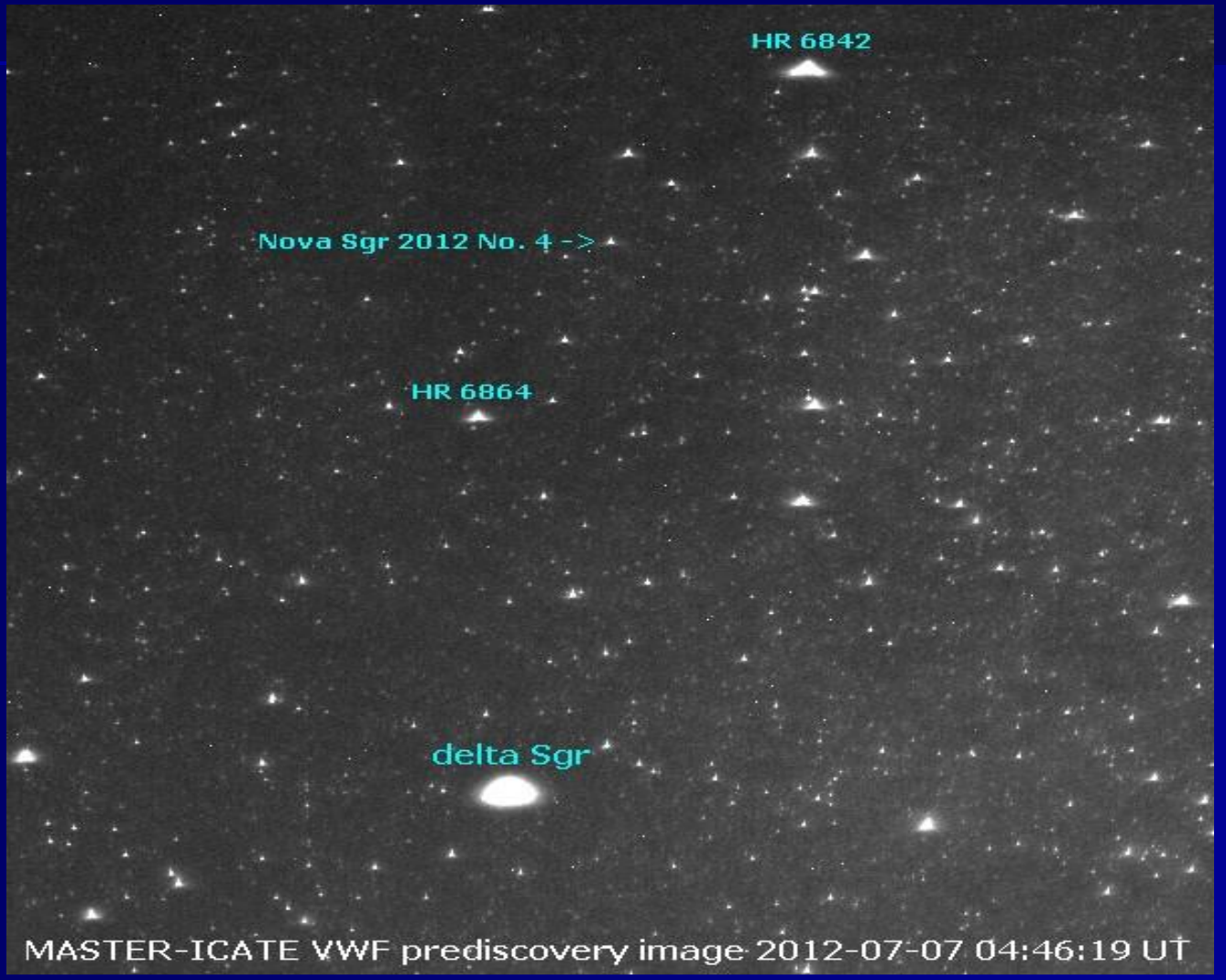
MASTER discoveries of CV (since the start of 2012)

MASTER designation	Mag.	Site	Date (UT)	Telegram
OT J061730.02+354036.6	14.5V	Amur	2011-12-28.572	ATel 3843
OT J105123.02+672528.3	14.6V	Amur	2012-01-01.700	ATel 3845
OT J061431.44+415904.4	18.4C	Kislo.	2012-01-14.861	ATel 3866
OT J124819.37+072049.6	16.8C	Kislo.	2012-01-21.045	ATel 3875
OT J021216.01+461154.5	14.4C	Tunka	2012-01-29.577	ATel 3898
OT J124346.19+160504.1	16.8C	Kislo.	2012-02-16.027	ATel 3935
OT J064757.28+594811.3	18.4C	Tunka	2012-02-16.779	ATel 3935
OT J072948.66+593824.4	13.3C	Tunka	2012-02-17.626	ATel 3935
OT J033006.27+181233.1	16.1C	Kislo.	2012-02-21.717	ATel 3938
OT J070737.08+104933.7	16.0R	Amur	2012-03-16.478	ATel 3981

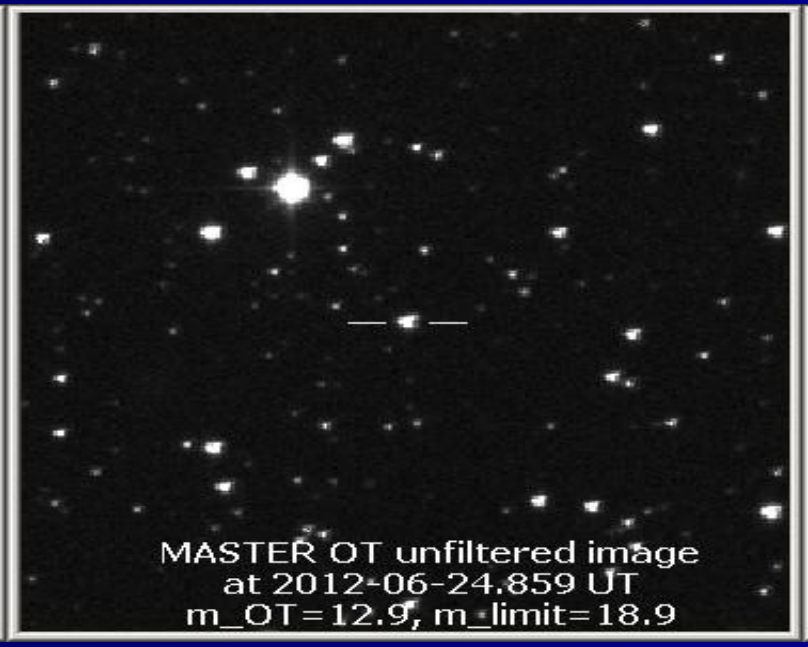
MASTER discoveries of CV in 2012 (continued)

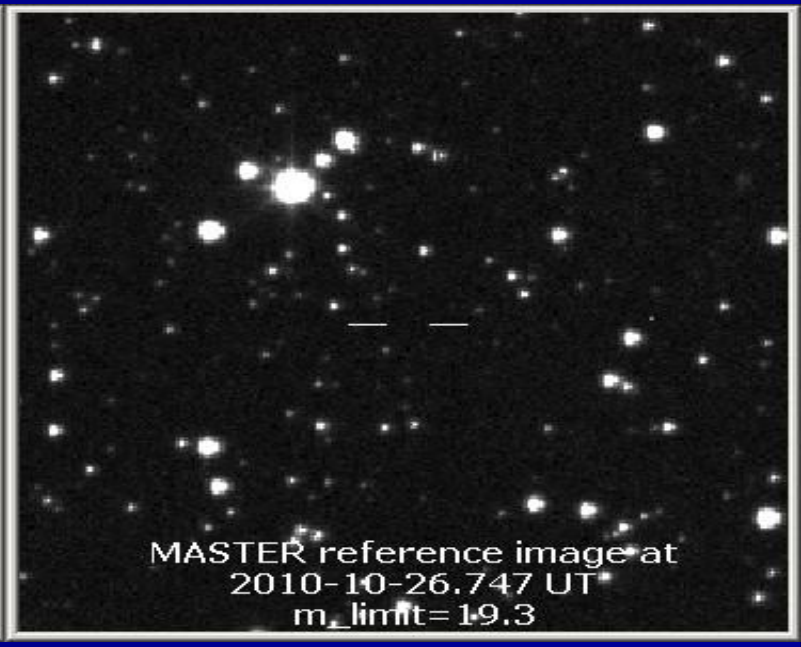
MASTER designation	Mag.	Site	Date (UT)	Telegram
OT J072351.31+635526.2	16.1C	Amur	2012-03-18.505	ATel 4001
OT J063425.03+434513.4	18.4C	Tunka	2012-03-25.653	ATel 4003
OT J174305.70+231107.8	15.6C	Amur	2012-04-05.831	ATel 4022
OT J182201.93+324906.7	15.4C	Amur	2012-04-29.791	ATel 4084
OT J184809.40+395440.5	16.0C	Kislo.	2012-04-30.953	ATel 4084
OT J221621.91+705415.5	15.3C	Amur	2012-06-03.656	ATel 4150
OT J221811.12+654219.9	14.3C	Amur	2012-06-03.655	ATel 4150
OT J211258.65+242145.4	12.9C	Kislo.	2012-06-24.859	ATel 4208
OT J225350.78+364434.5	17.8C	Amur	2012-06-25.728	ATel 4213
Note: 2 CVs on June 03 were discovered on 2 images separated by **96 sec**.				

Nova Sgr 2012 No.4 prediscovery image by MASTER-ICATE



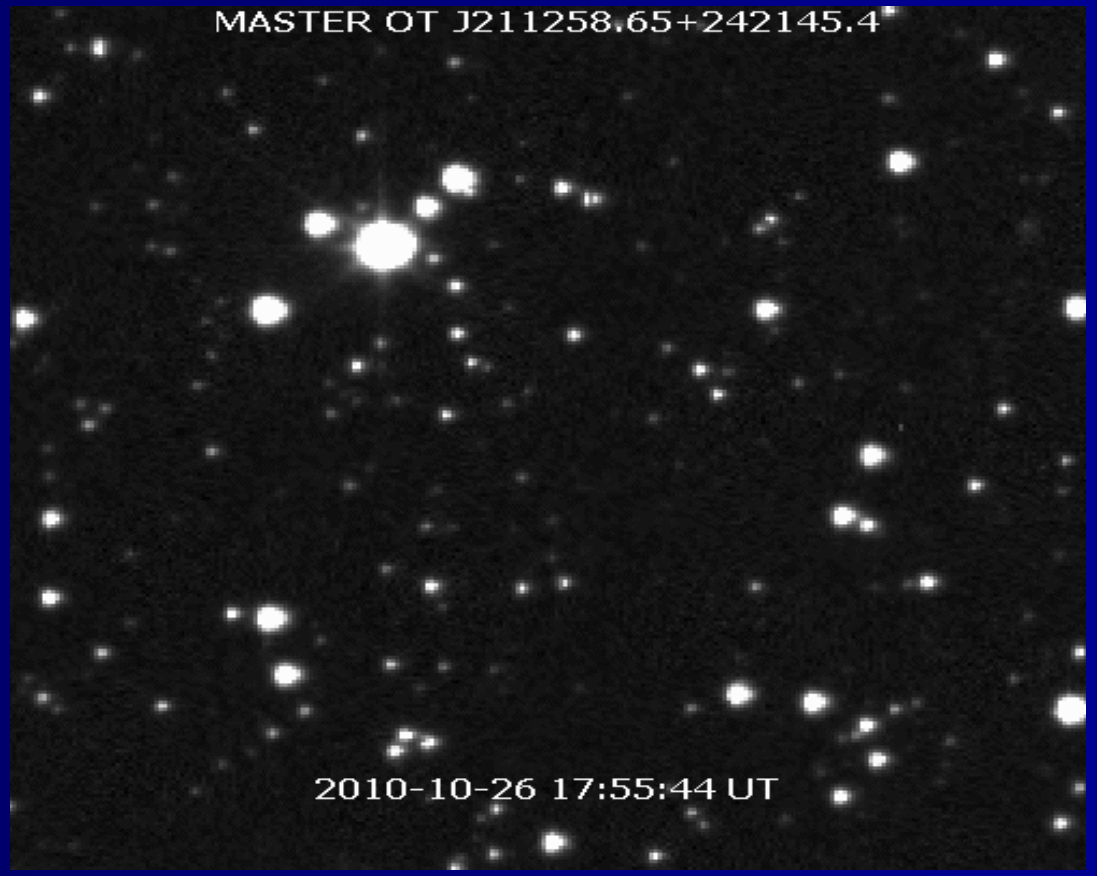
Brightest MASTER CV so far OT J211258.65+242145.4



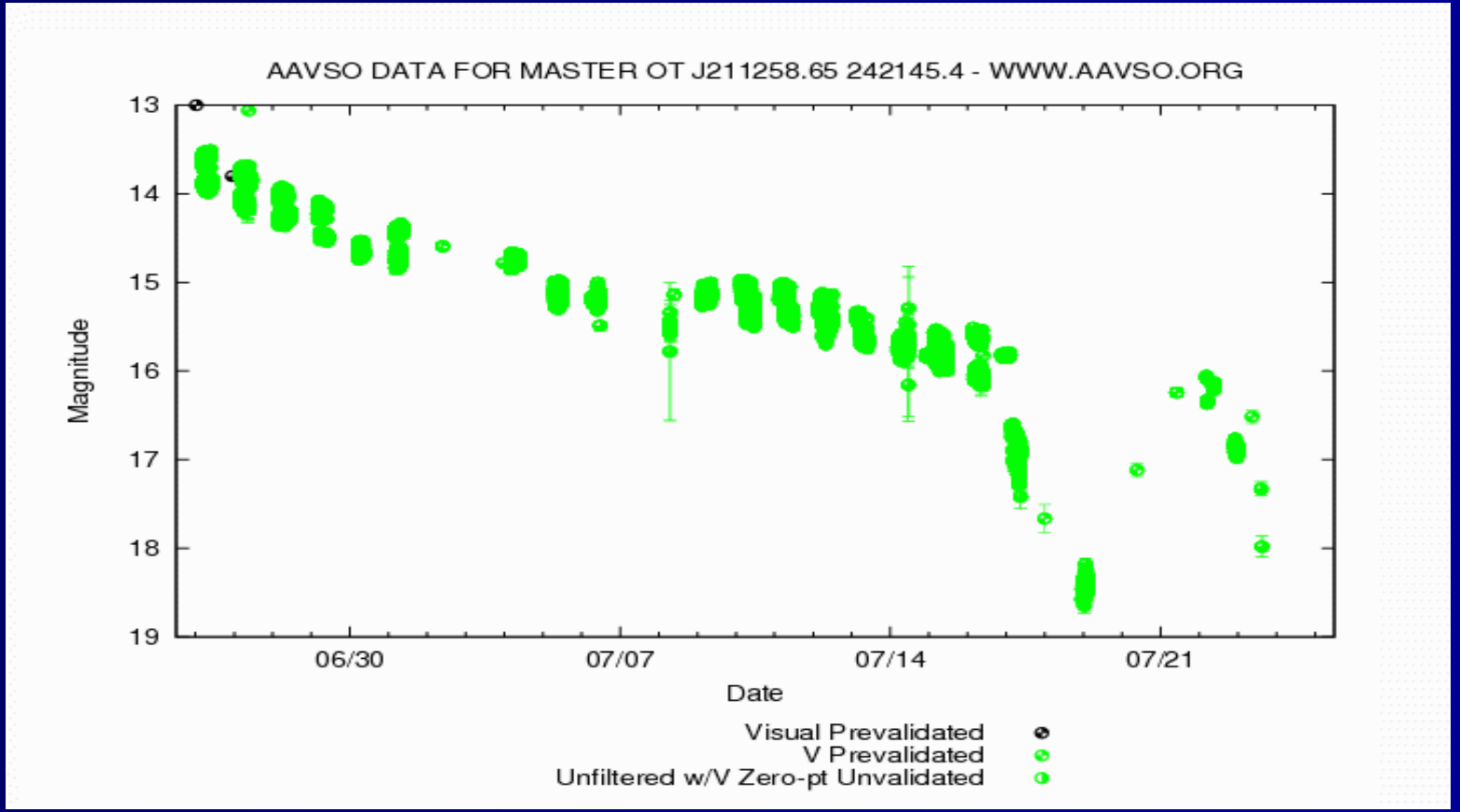


Range: 12.9C-20.8B Type: UGWZ Period: 0.0598d (86.1 min) Published: ATel 4208, 2012 June 25

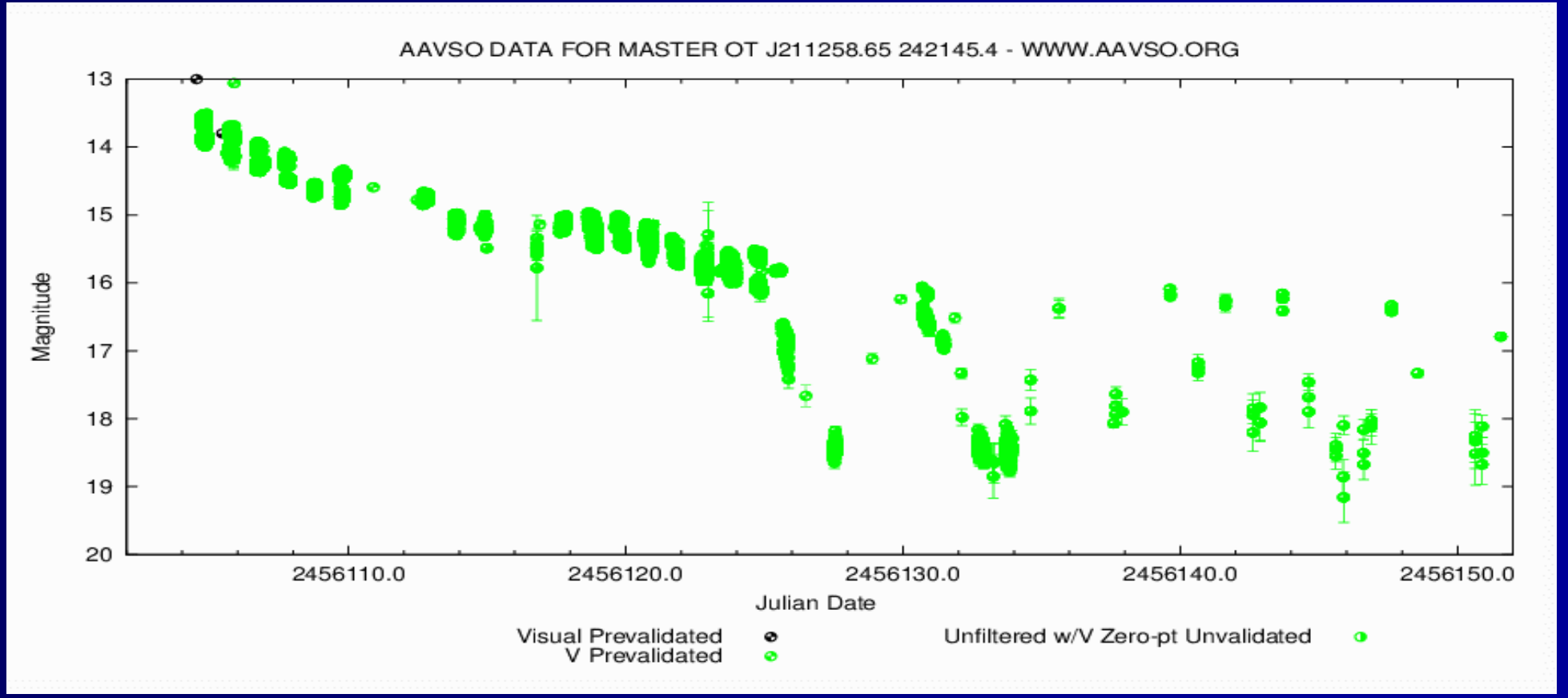
OT J211258.65+242145.4



10000 observations in 30 days since the discovery!



7 rebrightenings in the next 25 days!



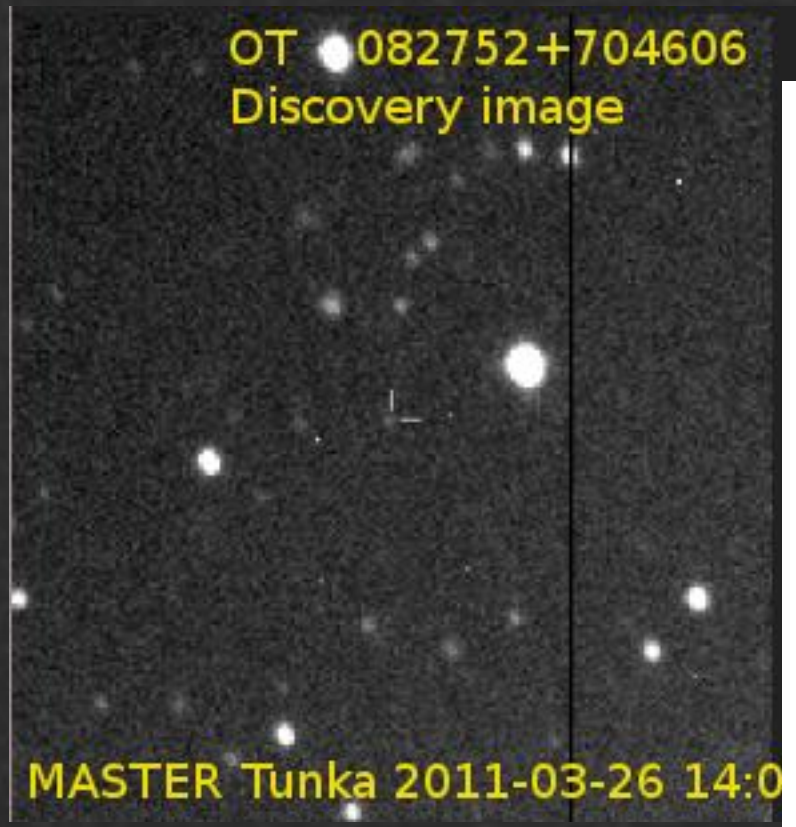
Scientific output

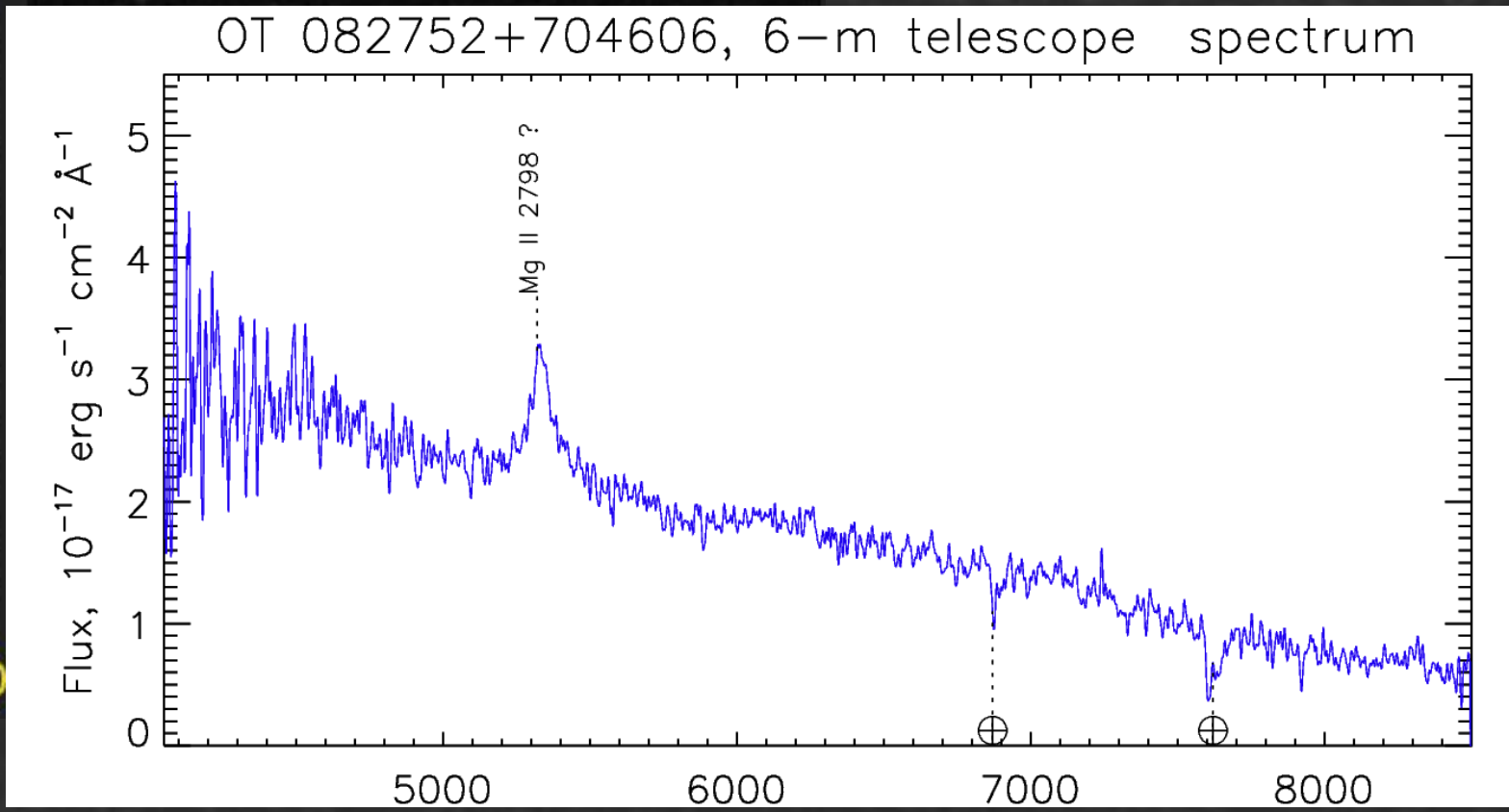
- MASTER telescopes are providing the large share of bright CV discoveries in the world
- Objects discovered by MASTER are getting significant attention from the international CV community
- MASTER database has a lot of data on new and potential future bright CVs

Perspectives

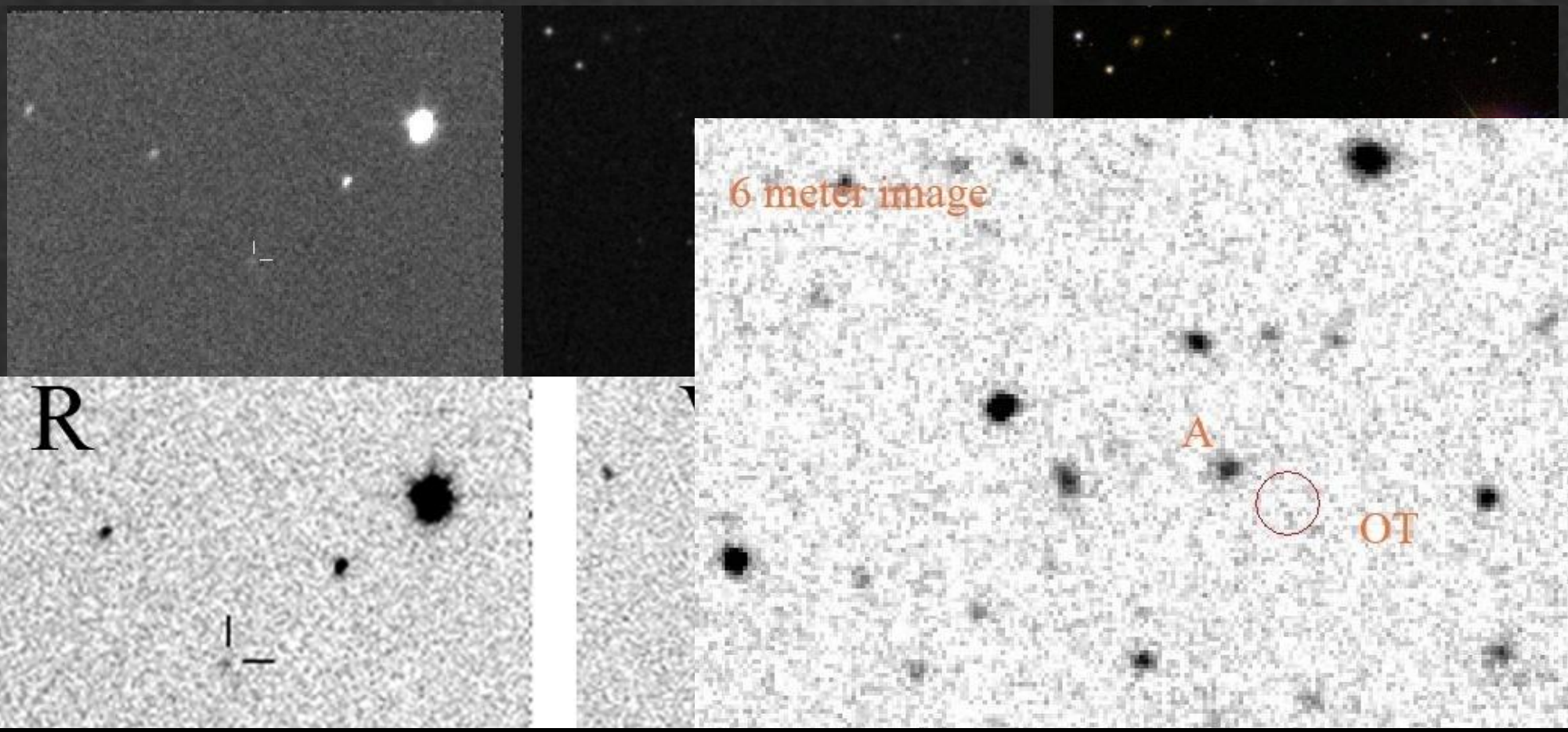
- Southern CVs with MASTER-Argentina
- Photometric time series with MASTER-Vostryakovo and University telescopes
- Spectroscopic identification with future 2.5-m MSU telescope near Kislovodsk
- Search for eclipses in our database
- Detailed statistical analysis

Unknown nature astrophysical transients :
OT082752+704606





Short optical transients MASTER OT114444+323011



On December 23 on the 6th meter telescope of Special astrophysical observatory by means of SCORPIO-2 imit is 25 mag. The nearest galaxy at distance of 6.2'' from the center of errorbox, that corresponds to linear distance in 45 kpc, in the assumption Omega_lambda = 0.7, H = 75 km/s/Mpc of and red shift of z=1 typicaly for galaxies of the 23-rd mag.

First asteroid discovering by MASTER

2011 OH26

First asteroid MASTER discovered

Asteroid viewer - Mozilla Firefox

Файл Правка Вид Журнал Закладки Инструменты Справка

https://93.92.89.140/viewer.php?id=2756419

Images Supernovae Asteroids Planner Transients Sky map Users evg

Asteroid list > nodoubt > Asteroid #2756419

Asteroid candidate
Id:2756419
Status:nodoubt
Modified by:Marginalis
history

This is: Star | Noise | Asteroid | Comet | Not sure?: Not sure | Known: Defined

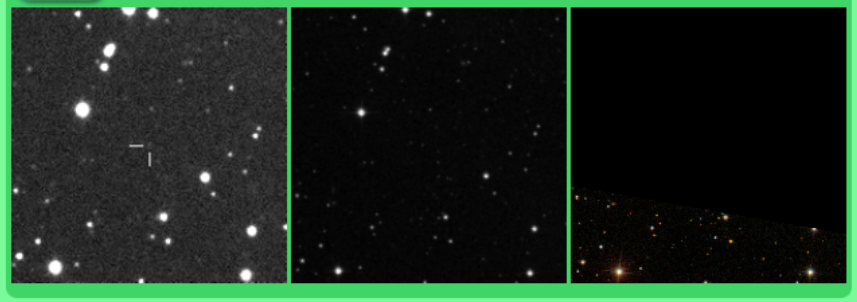
telegram

MASTER DSS SDSS

Observation #1

Date & Time:2011-08-02 18:59:02.745 FWHM:2.52 mag.:19.353 exposition.:180s
α:21h32m09.012s a:0.554 limit:19.3 x:2991.72
δ:+12°34'20.179" b:0.343 filter:W y:1991.34

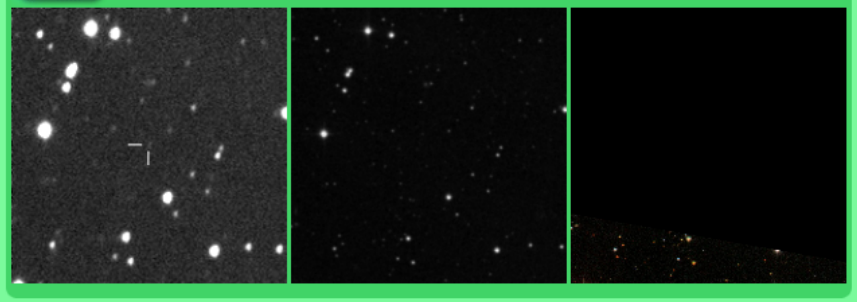
Check view in prev.php



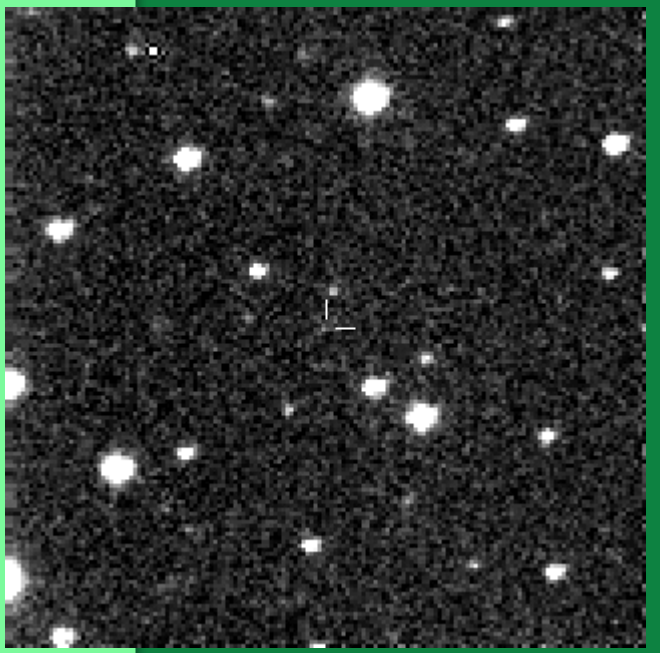
Observation #2

Date & Time:2011-08-02 20:24:22.498 FWHM:4.08 mag.:18.534 exposition.:180s
α:21h32m05.711s a:1.03 limit:19.31 x:2921.41
δ:+12°34'48.022" b:0.462 filter:W y:2029.66

Check view in prev.php



Observation #3

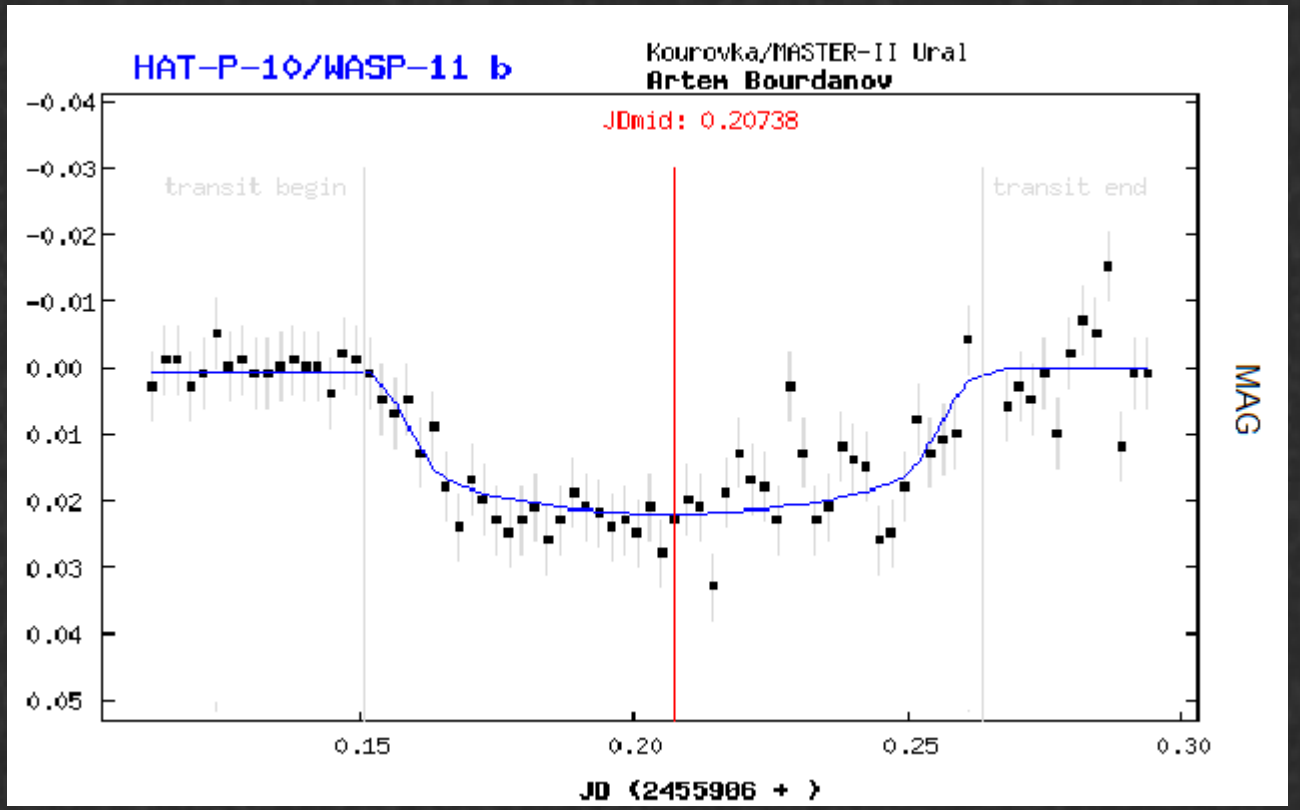


Найти: плава Предыдущее Следующее Подсветить все Учесть регистр

Comet independently opened by the MASTER network, Atel 3868

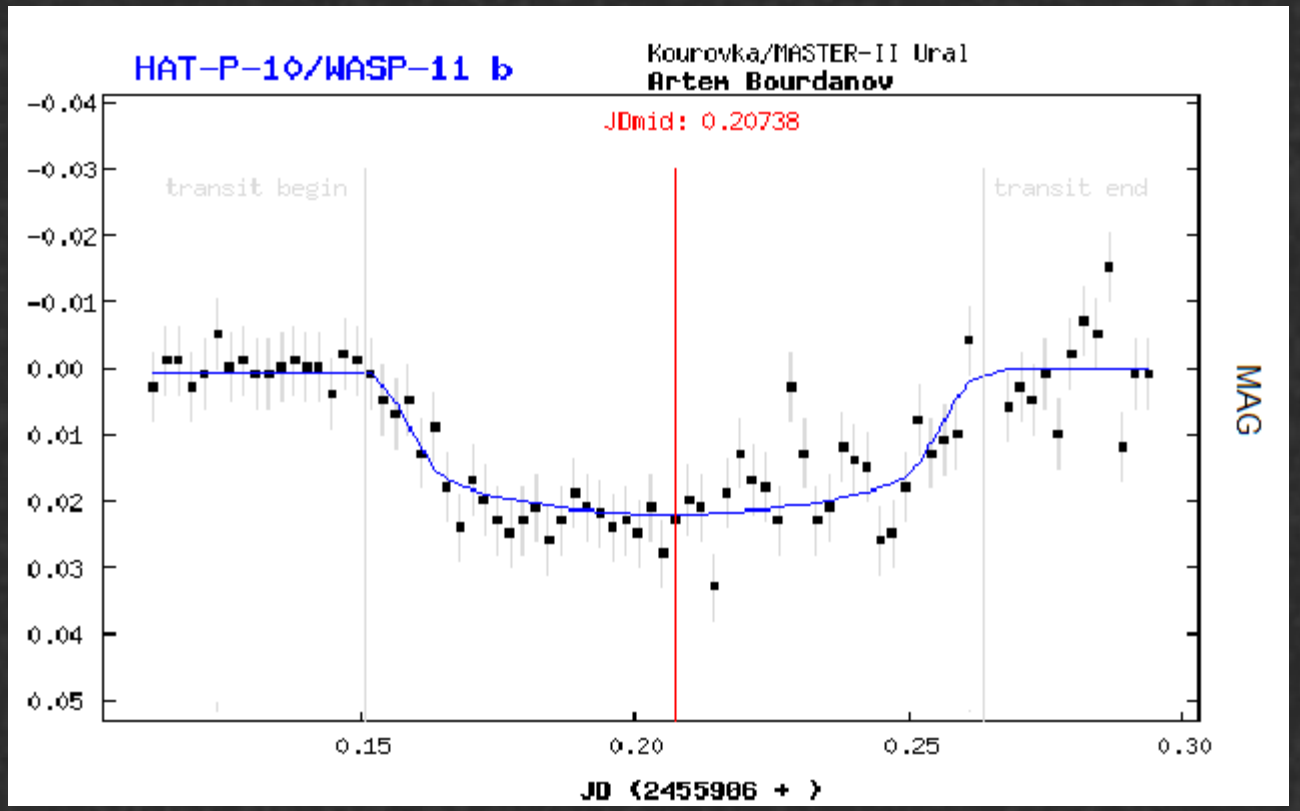
17 Jan 2012; 15:55 UT

High-precision photometry: Extrasolar planet



Transit of HAT-P-10/WASP-11 b in the filter R, received in Kourovka 10.12.2011. Depth of transit of 0.022 ± 0.002 mag, duration - 162.1 ± 4.6 minutes. Accuracy (in sense of a standard deviation of star size of a certain control star) - 0.004 mag

High-precision photometry: Extrasolar planet



transit of WASP-12 b in the filter R, received in Tunka 23.04.2012. Depth of transit 0.018 ± 0.001 mag, duration - 176.1 ± 2.2 minutes. Accuracy - 0.003 mag

Results 2011-2012 (may).

GCN

More than 60 telegrams

Atel

115 OT detections

(SN, Novae, Dwarf Nova, MPs, Orphan OT).

MPC Circular

more than 3928 Minor Planets positions.

IUC Circular

Over 20 telegrams

2013


ARCTIC OCEAN
GREENLAND
NORTH AMERICA
EUROPE
ASIA
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
AFRICA
SOUTH AMERICA
SOUTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
AUSTRALIA
ANTARCTICA

Argentina, february 2012

Mobile **A**stronomical **S**ystem of **TE**lescope-**R**obots

MASTER-ICATE-Argentina

Started 10 Feb 2012

Lomonosov Moscow State University, Instituto de Ciencias Astronomicas, de la Tierra y del Espacio (ICATE), Observatorio Astronomico Felix Aguilar (OAFA) , National University of San Juan, Sternberg Astronomical Institute, Moscow Union "Optic",

Latitude = -31º 48'.135 N; Longitude = -69º 19'.586 E; Altitude = ~2430 m

”Lomonosov”, SHOK, 2012 год

Prompt Optical High Time Resolution Observations

FOV = 2000 square degrees

Time Resolution =150ms

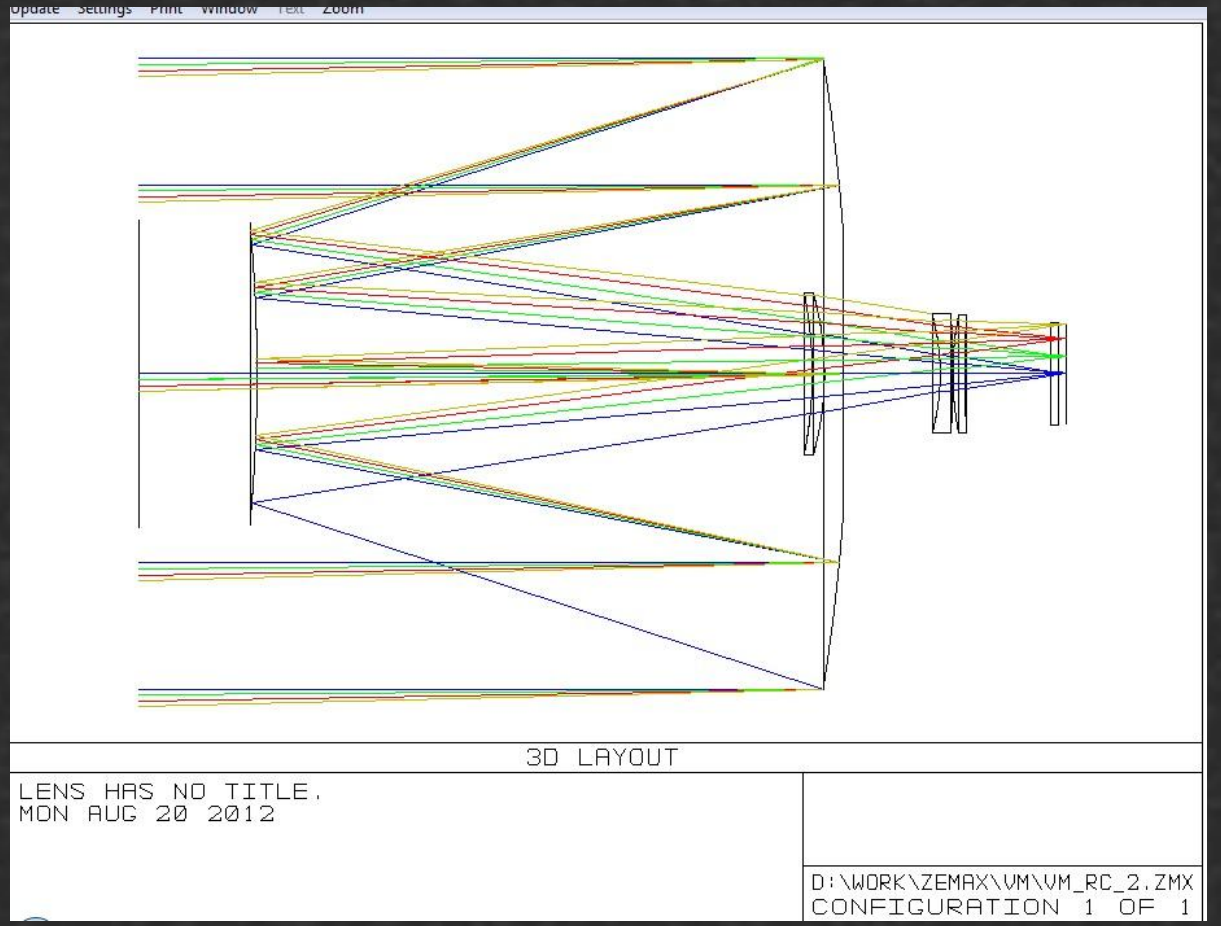
2015


ARCTIC OCEAN
GREENLAND
NORTH AMERICA
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
EUROPE
ASIA
AFRICA
NORTH PACIFIC OCEAN
SOUTH AMERICA
SOUTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
AUSTRALIA
SOUTH PACIFIC OCEAN
ANTARCTICA

MASTER III

Main parameters:

1. D=1 m. FOV = 4 square degrees
2. Survey Rate - 540 square degrees per night.
3. Limit – 22-23 m.
4. Fully Robotic




Thank You !