

**Uzbek Academy of Sciences  
Ulugh Beg Astronomical Institute**

**Maidanak observatory:  
telescopes, equipment and their  
condition**

**BURKHONOV Otabek and Maidanak team**

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# Modernization of Maidanak observatory strategy and their equipment

- Global modernization (see talk of academician Sh. Egamberdiev)
- Infrastructure upgrading (see talk of doctor Yu. Tillayev)
- Purchasing new CCD's
- Upgrading the telescopes

# 1.5 meter AZT-22

- Ritchey-Chretien f/7.74 (+long focus is f/11.5)
- D=1.5m
- SI 600 Series 4096x4096 CCD (Seoul National university)
- FOV 18' x 18'

	<b>Collaborators</b>
<b><u>1. Near by galaxies</u></b>	<b><u>Korea</u></b>
<b><u>2. Gravitational lenses</u></b>	<b><u>Russia, Ukraine</u></b>
<b><u>3. Asteroids</u></b>	<b><u>Ukraine, Czech Republic</u></b>
<b><u>4. Blazars</u></b>	<b><u>Italy</u></b>
<b><u>5. Seyfert galaxies</u></b>	<b>Russia</b>
<b><u>6. GRB objects</u></b>	<b>Russia</b>
<b><u>7. Variable stars</u></b>	<b>India</b>



6th MUM - 2021

**Observers:**  
**A.Shaymanov**  
**T.Boyqobilov**

# 1.5 meter AZT-22

## What is new?

A new CCD camera was purchased and ready to use

**Andor iKon-XL 231 (XL-EA07-DS)**

**EA07 - The sensor type is BEX2-DD (deep depletion with fringe suppression and dual AR coating)**

**D - The cooling type is Deep Cooled (max. cooling -100°C @ coolant temp of 10°C)**

**S - The shutter type is Standard Shutter**

**It will be installed after the new year.**

# 1.5 meter AZT-22

## Andor iKon-XL 231

Pixels: **4096 (H) x 4108 (V)**

Pixel size: **15 x 15  $\mu\text{m}$**

Image area **61.4 x 61.7 mm** (with 100% fill factor)

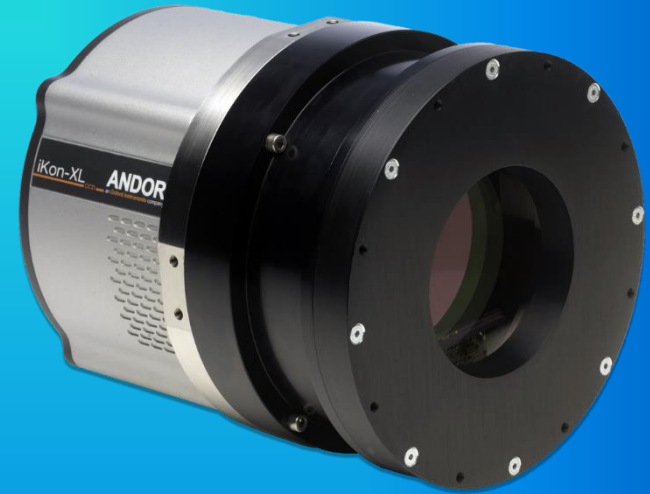
Active area pixel well depth (typical) **350,000 e<sup>-</sup>**

Pixel readout rates **0.1, 0.5, 1, 3 MHz**

Peak QE **>90%**

GAIN (1 MHz 18 bit, high sensitivity mode) - **1,55**

Readout noise (1 MHz 18 bit, high sensitivity mode) - **6,5**



# 1.5 meter AZT-22





# Zeiss-1000 1m telescope

- Cassegrain f/13
- D=1.0m
- Apogee Alta-U9000 CCD 3056x3056



**This telescope was temporary stopped for preventive inspection**

# 0.6 meter telescope NT-60 (Zeiss 600)

Cassegrain f/12.5,  
D=0.60m

Observers:  
A. Shoxujayev  
A. Raximov

	<b>Collaborators</b>
<b><u>1. Asteroids</u></b>	<b><u>Japan, Ukraine</u></b>
<b><u>2. Extrasolar planet</u></b>	
<b><u>3. Variable stars</u></b>	<b><u>India</u></b>
<b><u>4. Urgent observations (GRANDMA)</u></b>	<b><u>France</u></b>



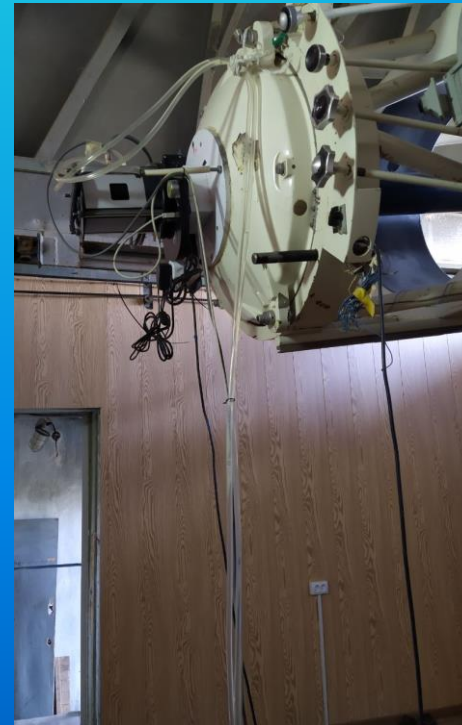


# 0.6 meter telescope NT-60 (Zeiss 600)

## What is new?

A new CCD camera was purchased and installed

### Andor iKon-L 936 (DZ 936N-BEX2-DD)



# 0.6 meter telescope NT-60 (Zeiss 600)

## Andor iKon-L (DZ 936N-BEX2-DD)

**BEX2-DD - The sensor type is BEX2-DD (Back Illuminated CCD, Deep Depletion with fringe suppression, extended range dual AR coating)**

**Pixels: 2048 (H) x 2048 (V)**

**Pixel size: 13,5x 13,5  $\mu\text{m}$**

**Active area pixel well depth (typical) 150,000 e-**

**Pixel readout rates 0.05, 1, 3, 5 MHz**

**Peak QE >90%**

**GAIN (1 MHz 18 bit, high sensitivity mode) - 2,2**

**Readout noise (1 MHz 18 bit, high sensitivity mode) - 7,7**



# 0.6m telescope ST-60 (Zeiss-600)

- Cassegrain f/12.5

- D=60 cm

Observers:  
A .Kholboyev  
S. Toraqulov

	<b>Collaborators</b>
<b><u>1. Blazars</u></b>	<b><u>Italy</u></b>
<b>2. Variable stars</b>	<b>ST</b>
<b><u>3. Urgent observations (GRANDMA)</u></b>	<b><u>France</u></b>



# Zeiss-600 0.6m telescope ST-60

## What is new?

A new CCD camera was purchased and installed

### Apogee Aspen CG 230-1-G09-S58



# Zeiss-600 0.6m telescope ST-60

## Apogee Aspen CG 230-1-G09-S58

**Array Size (pixels):** 2048 x 2048 (4 Megapixel)

**Pixel Size** 15 x 15 mm

**Sensor Size** 30.7 x 30.7 mm (944 mm<sup>2</sup>) 43.4 mm diagonal

**Pixel Well Depth (typical)** 183,000 e-

**Read Noise•3** 20.8e- (RMS @ 0.9 Mhz)

**Quantum Efficiency** 96% maximum @550 nm 55% @400 nm



# Zeiss-600 0.6m telescope ET-60

**Under discuss**

?



**This telescope repaired and ready to use**

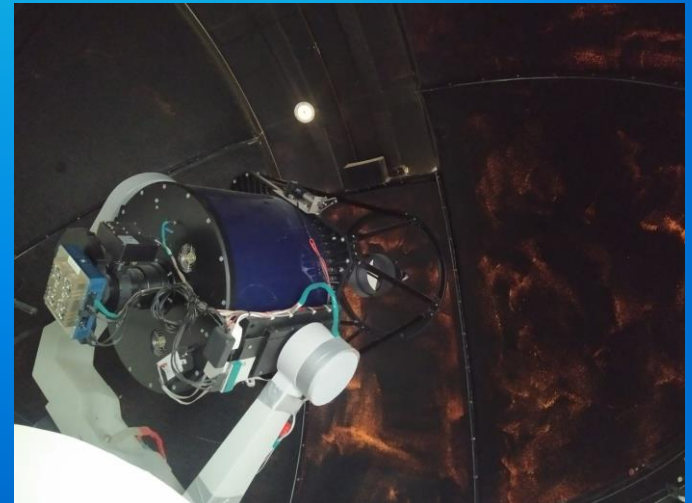
# AMT-1 0.5m telescope (AstroTel-Maidanak Telescope)

- Corrected Ritchey–Chretien f/8,
- D=51 cm
- Apogee Alta-U16M CCD



	<b>Collaborators</b>
<b><u>1. Extrasolar planet</u></b>	<b><u>Russian</u></b>
<b><u>2. Variable stars</u></b>	<b><u>Russian</u></b>

**Observers:**  
Remote observing  
Burkhonov, Satovskiy, Karimov, Gaysin



# Observation schedule

Observation schedule \* October 2021

Duration of night h 10.5 hours

**Telescope "AZT-22"**

Lunar phases																
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1. GRB objects	2 h	2 h	2 h		2 h	2 h		2 h	2 h	1 h 15 m	1 h 15 m		1 h 15 m		1 h 15 m	
2. Nearby galaxies				2 h 15 m	2 h 45 m	2 h 45 m	2 h 15 m	2 h 45 m	2 h 45 m	1 h 45 m	2 h	2 h	1 h 45 m	2 h	2 h	
3. Gravitational lenses				2 h 30 m	2 h 30 m	2 h 30 m	2 h 30 m	2 h 30 m	2 h 45 m	2 h	1 h 45 m	2 h	2 h	1 h 45 m	1 h 45 m	
4. Asteroids											5 h	5 h	5 h	5 h		
5. Blazars					1 h 30 m	1 h 30 m		1 h 30 m	1 h 30 m				1 h			
6. Seyfert galaxies					1 h 15 m	1 h 15 m		1 h 15 m	1 h					1 h 15 m		
7. Variable stars				5 h 15 m			5 h 15 m			5 h					5 h	
8. Urgent observations	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	

Lunar phases																
Date	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. GRB objects	2 h	2 h		2 h	2 h		2 h	2 h	1 h	2 h	2 h	1 h 15 m		1 h 30 m		1 h 15 m
2. Nearby galaxies	2 h 45 m	2 h 45 m	2 h 15 m	2 h 45 m	2 h 45 m	2 h 30 m	2 h 45 m	2 h 45 m	2 h	2 h 45 m	2 h 45 m	1 h 45 m	2 h	1 h 45 m	2 h	1 h 45 m
3. Gravitational lenses	2 h 30 m	2 h 30 m	2 h 30 m	2 h 30 m	2 h 30 m	2 h 15 m	2 h 30 m	2 h 45 m	1 h 45 m	2 h 30 m	2 h 45 m	2 h	2 h	1 h 45 m	2 h	1 h 45 m
4. Asteroids												5 h	5 h	5 h	5 h	
5. Blazars	1 h 30 m	1 h 30 m		1 h 30 m	1 h 30 m		1 h 30 m	1 h 30 m		1 h 30 m	1 h 30 m		1 h			
6. Seyfert galaxies	1 h 15 m	1 h 15 m		1 h 15 m	1 h 15 m		1 h 15 m	1 h		1 h 15 m	1 h				1 h	
7. Variable stars			5 h 15 m			5 h 15 m		5 h 15 m								5 h 15 m
8. Urgent observations	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m

1 h
  Time is allocated for telescope maintenance. No observation time is available
  1 h
  Time not allocated

Colaborators

1. GRB objects Russian Space Research Institute, Seoul National University (Korea)

2. Nearby galaxies Seoul National University (Korea), Sternberg Astronomical Institute Moscow University

3. Gravitational lenses Sternberg Astronomical Institute Moscow University, Kharkiv National University Astr. observat. (Ukraine)

4. Asteroids NAOJ Japan, ISON Russia, Keldysh Institute of Applied Mathematics (Russian Academy of Sciences)

5. Blazars University of Milan (Italy), NAOC China

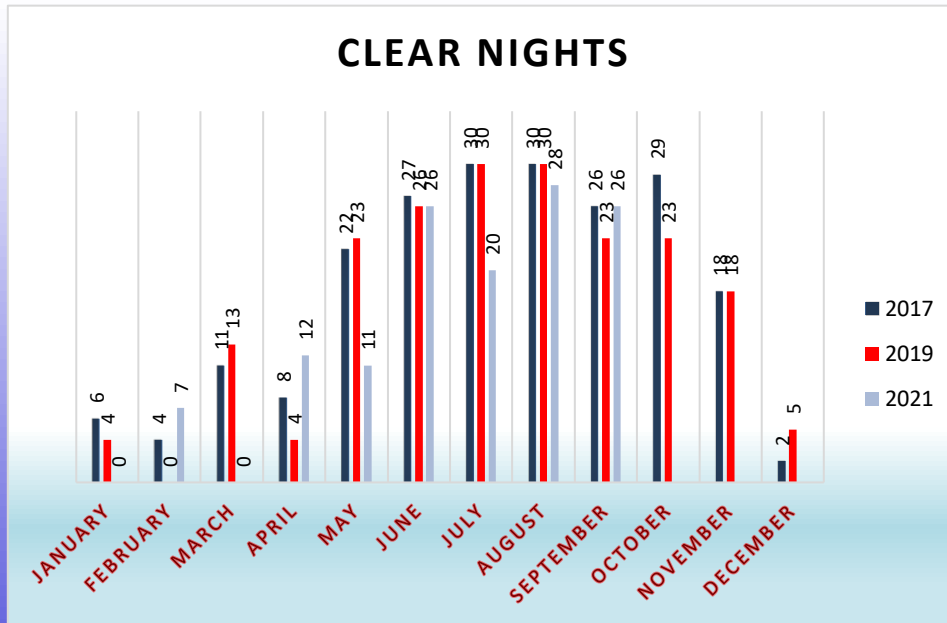
6. Seyfert galaxies Sternberg Astronomical Institute Moscow University, National Central University Taiwan

7. Variable stars India

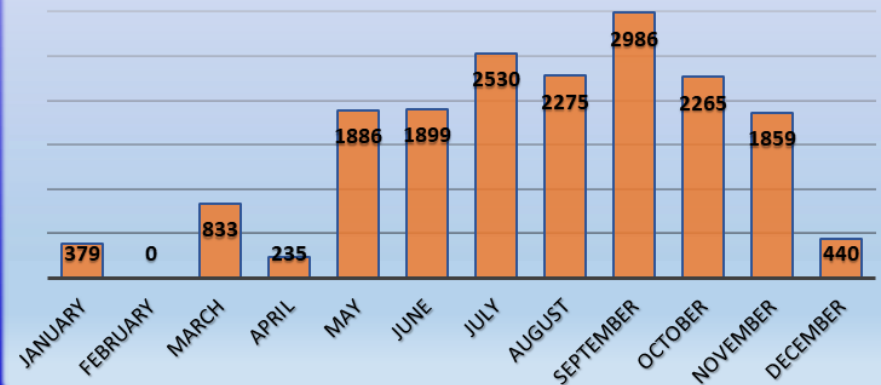
8. Urgent observations Scientific council of Astronomical Institute

\* With accordance to international regulation the observational time which was not used by the observer due to technical problems or weather condition is nontransferable.

# Observational Statistics on example 1.5 m telescope



**Total number of images per month**



Total (2019): 199

17587





We are happy to see you  
at the Maidanak observatory!

<http://www.astrin.uz>  
<http://www.maidanak.uz>