

# The SBG Telescope of the Astronomical Observatory of the Ural Federal University: Opportunities for Gaia-FUN-SSO

Polina Zakharova    Eduard Kuznetsov

Astronomical Observatory  
Ural Federal University  
Ekaterinburg, Russia

## Gaia-FUN-SSO-3

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# Outline

- 1 Introduction
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- 3 Instrument
- 4 Software
- 5 Campaigns of observation
- 6 Other observations
- 7 Conclusion

# Astronomical Observatory of the Ural Federal University

## Kourovskaya Astronomical Observatory

- The observatory has participated in the **GAIA-FUN-SSO network** since **September 2013**.
- **Three campaigns** of observation were as tests of observational opportunities
  - 2013 TV135 campaign (October 2013 — January 2014)
  - 2007 HB15 campaign (April 2014)
  - 2014 HQ124 short campaign (8–11 June 2014)

# Astronomical Observatory of the Ural Federal University

## Localization

Name	<b>Kourovskaya</b>
IAU Code	<b>168</b>
Longitude	<b>59.5472 deg</b>
Latitude	<b>56.9473 deg</b>
Elevation	<b>290 m</b>

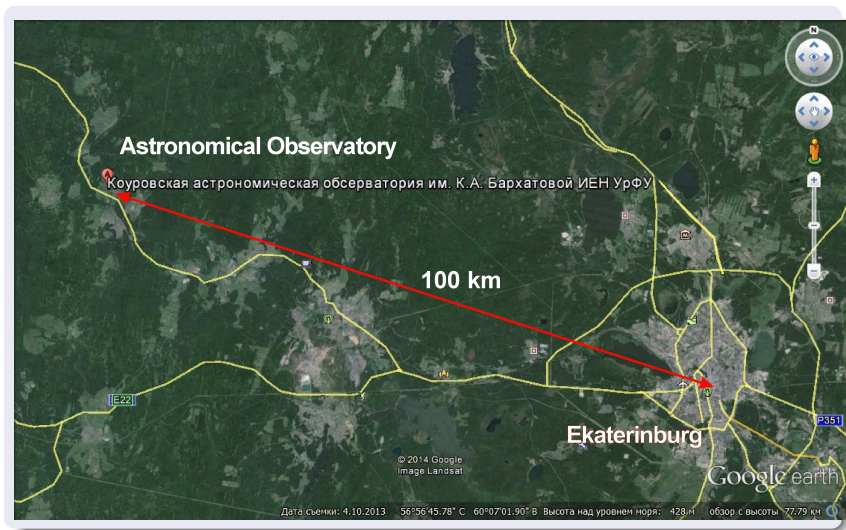
## Dates

- **The observatory** was found on **12 January 1965**.
- **The SBG telescope** has been used since **1974**.
- **The CCD observations** has carried out since **2005**.

# In the GAIA-FUN-SSO Network



# In the Middle Ural Range



# In the observatory



# The SBG telescope





# The SBG telescope

## Instrument specifications

Type	Reflector, Schmidt telescope
Mount	Four-axis alt-azimuth mounting
Focal length	0.788 m
Diameter	0.5 m

## Receptor specifications

CCD Camera	Alta U32 (Apogee)
CCD Array	KAF-3200ME-1 (CODAC)
Elements	2184 × 1472 elements, 6.8 × 6.8 μm
Pixel size	1.803 arcsec/pixel
Field of view	65 × 44 arcmin
Limiting magnitude	19 mag

# The SBG telescope

## The precision timing system

- 12-channel GPS receiver **Acutime 2000 GPS Smart Antenna**

## Controlling software

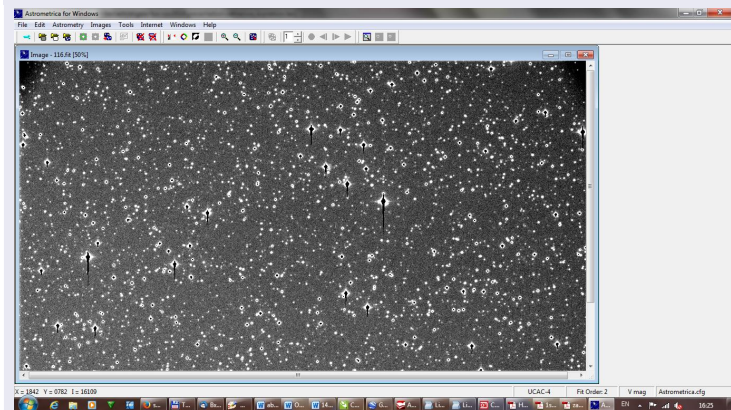
- **SBGControl**

## Main targets

- Small Solar System bodies
- Artificial satellites of the Earth

# Astrometrical software

## Astrometrica



# Campaigns of observation

## 2013 TV135 campaign (October 2013 — January 2014)

The screenshot displays the Astrometrica software interface. The main window shows an astronomical image with numerous stars. A central star is highlighted with a red box and labeled 'TV135'. The software interface includes a menu bar (File, Edit, Astrometry, Images, Tools, Internet, Windows, Help), a toolbar, and a status bar at the bottom. The status bar shows 'UCAC-4', 'Fit Order: 2', 'V mag', and 'Astrometrica.dg'. A 'Data Reduction Results' table is visible in the bottom right corner.

Image	Detectors	Ref. Stars	Ref./Ast.	Fit Order	dRA	dDe	Ref./Phot.	dmag	Zero Pt.
116.t	3997	1325	1142	2	0.18"	0.17"	938	0.13mag	27.43mag

# Campaigns of observation

## 2007 HB15 campaign (April 2014)

- The asteroid was not detected.
- It was very faint object for the SBG telescope.

## 2014 HQ124 short campaign (8–11 June 2014)

- The asteroid was not observed.
- The sky was very light in nautical twilight near a day of summer solstice.

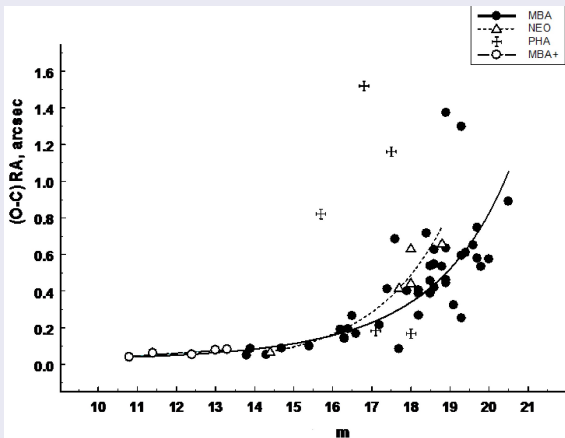
# Observations of small Solar System bodies in 2014

## Small bodies

- 54 asteroids (MBA, NEO, PHA).
- 12 comets.

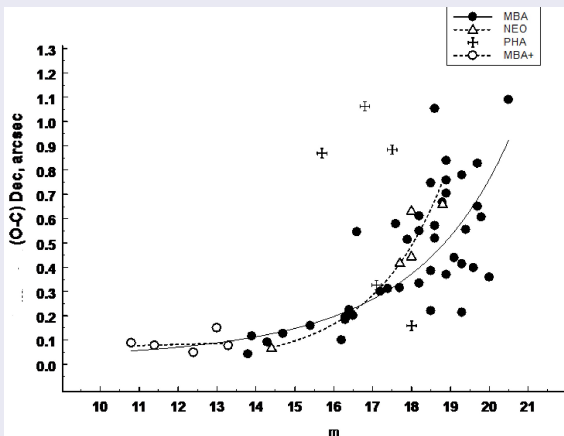
# O-C in right ascension

Rms (O-C) in right ascension (G.Kaiser, private communication)



# O-C in declination

## Rms (O-C) in declination (G.Kaiser, private communication)





# Future

## 1.2 m telescope



Type

Reflector,  
Cassegrain  
system

Mount

Alt-azimuth  
mounting

Focal length

3.5 m

Diameter

1.2 m

Field of view

1.15 deg

Limiting magnitude

20 mag

# Conclusion

## Conclusion

- The Astronomical Observatory of the Ural Federal University can efficiently participate in **the Gaia-FUN-SSO Network**.

Thank you  
for your attention!