

The Special Astrophysical Observatory of the RAS - BTA

The Special Astrophysical Observatory of the Russian Academy of Sciences (SAO RAS) was founded in 1966 as a shared research facility center.

To date, the observatory is the Russia's center of ground-based astronomy, operating two largest Russian telescopes for optical and radio astronomy. The optical telescope is the Big Telescope Azimuthal (BTA), a reflector with a primary mirror of 6 m in diameter. The facility provides a broad range of astronomical research:

- studying cosmic objects of different nature (stars and star systems at different stages of their evolution, pulsars, microquasars, optical transients, galaxies, their population, kinematics and dynamics, active galactic nuclei, the large-scale structure of the Universe, comets, exoplanets);
- ground-based support for cosmic missions;
- development of observing methods; IT support for observations.

Observing time is provided free of charge on the competitive basis (via the Russian Telescope Time Allocation Committee). The BTA is a fairly large instrument, having a unique geographical location in latitude and longitude among the world's telescopes. The telescope is equipped and is constantly being reequipped with modern scientific equipment. At the present time, the BTA has six available scientific instruments providing research both by classical means and using technically sophisticated methods, among those 3D panoramic spectroscopy, speckle interferometry, high-resolution spectroscopy, and ultra-high temporal resolution photospectropolarimetry.



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Instruments:	Domain and object of research : PSE
SCORPIO-1	The multipurpose spectrograph of the BTA primary focus. Spectroscopy and photometry of faint (24m-26m) objects in a 6'x6' field of view in the whole visible wavelength range (from 360 to 1000 nm) with spectral resolution $R = \lambda/\Delta\lambda$ from 500 to 2500.
SCORPIO-2	The upgraded multipurpose spectrograph of the BTA primary focus. Spectroscopy and photometry. High-accuracy polarimetric and spectropolarimetric observations. A set of scanning Fabry-Perot interferometers with resolution R from 250 to 16 000 for panoramic spectroscopy in the same wide 6'x6' field of view.
NES	Nasmyth Echelle Spectrograph. Spectroscopy of stars up to 10m (absorption spectra) or 15m (emission) with spectral resolution $R = 40000-50000$ in the 305-1000 nm wavelength range.
MSS	Main Stellar Spectrograph. Spectroscopy and spectropolarimetry (circular polarization) of stars brighter than 12m with resolution up to $R = 15000$.
Speckle Interferometer	Studying binary and multiple star systems, single stars, asteroids, and other celestial bodies with an angular resolution close to the diffraction limit of the telescope (0.02 arcsec).
MPPP	Multimode Panoramic Photopolarimeter. Optical variability of astrophysical objects with high temporal resolution (up to 1 ms) in a field of view up to 1'. Linear polarization measurements. Low-resolution spectral mode.