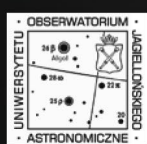




POLISH ASTRONOMICAL FACILITIES



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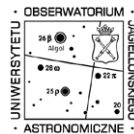
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Cover image: Astronomical Observatory of the Jagiellonian University at Fort Skala, Cracow. *Credit: Astronarium*



POLISH ASTRONOMICAL FACILITIES

Polish astronomy is proud of its long history and tradition dating back to Nicolaus Copernicus and Johannes Hevelius. It also has many achievements and outstanding scientists today. Polish astronomers take part in major international projects and programmes. Our current position in the world of astronomy has its foundations in discoveries of extrasolar planets, gravitational waves studies or imaging the black hole in galaxy M87 – just to mention some of the most significant examples.

This publication presents major facilities dealing with astronomical research in our country. Additionally, it provides a catalog of locations where one can study astronomy, a map of planetariums, as well as an index of scientific media and main amateur organizations.

We hope that this publication will help anyone interested in establishing scientific and educational cooperation, assist young people in choosing the most interesting place for studying science, offer journalists contact with leading Polish astronomers and develop cooperation between scientific facilities and industry. In addition, it will present a current outline of scientific research in astronomy and astrophysics conducted in Poland.

Marek Sarna

*President
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Polish Astronomical Society [PTA] was created on February 19, 1923, during a convention of Polish astronomers in Toruń. It is a scientific association of professional astronomers. Presently it has nearly 300 members.

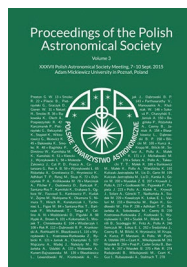
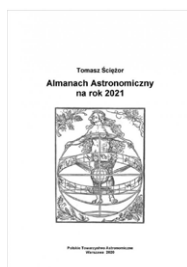
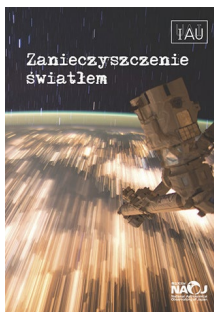
The society operates in two major areas: supporting scientific research along with education and popularization of astronomy. In particular, it holds biennial convention for the largest Polish scientific conference dedicated to astronomy and space studies and offering a review of current research in studies of the Universe conducted in Poland and around the world. PAS [PTA] also publishes the series 'Proceedings of the Polish Astronomical Society' and awards medals for scientific achievements (Bohdan Paczyński Medal, PAS Youth Award) and for popularization of knowledge about the Universe (Zonn Medal).

When it comes to education and popularization of astronomy, PAS [PTA] publishes a scientific magazine 'Urania – Postępy Astronomii' ('Urania – Advances in Astronomy'), runs a large astronomical website Urania (www.uraniamagazine.edu.pl), produces the 'Astronarium' television series (available also on YouTube). Polish Astronomical Society also endows youth scholarships, organizes contests and supports various initiatives of other organizations and institutions (e.g. Astronomy Olympiad, Nationwide Youth Astronomical Seminar).



Artist's impression of planet Pirx as seen from its hypothetical natural satellite in the Solaris star system. Names for these objects were chosen in 2019 in a worldwide contest of the International Astronomical Union. In Poland the contest was coordinated by the Polish Astronomical Society. Credit: M. Mizera/PAS [PTA]/IAU100

A group picture of participants of the 38th Convention of Polish Astronomical Society. (September 11-14, 2017, in Zielona Góra). Credit: Kazimierz Adamczewski/PAS





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Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences [CAMK PAN] has functioned in its present form since 1978 but its origins date back to 1956. It is the largest Polish scientific institute dealing with astronomy and astrophysics. It employs over 120 people, including around 70 scientific researchers. Its headquarters is located in Warsaw but the centre also has a facility in Toruń.

NCAC PAS [CAMK PAN] conducts both observational and theoretical research. Scientists from the centre take part in many major international research programmes (e.g. CTA, SALT, or LIGO-Virgo). The centre also manages communication with BRITE satellites, as well as runs the AstroCeNT project to conduct research in science and technology in the areas of particle astrophysics. NCAC manages the Cerro Armazones Observatory in Chile where a 2.5-meter telescope is under construction.

NCAC also runs doctoral studies within the Geoplanet Doctoral School (presently around 40 doctoral students).

Main research fields:

stellar astrophysics, high energy astrophysics,
asteroseismology, stellar systems dynamics,
dense matter physics, neutron stars, black holes,
active galaxies, cosmology, extrasolar planets,
gravitational waves, cosmic distance scale



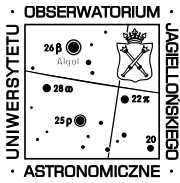
Dome of Southern African Large Telescope (SALT).
Credit: Lengau/Wikipedia



*NCAC PAS
[CAMK PAN]
buildings
in Warsaw.
Credit:
Independent
astronomy/
Polish
Astronomical
Society*

Major projects:

H.E.S.S., CTA, Herschel, SALT, INTEGRAL, Fermi, Solaris, BRITE, AstroCeNT, Araucaria, CASE, Ligo/Virgo, Gaia-ESO, AstroGrid-PL, ATHENA, Polish Fireball Network



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Astronomical Observatory of the Jagiellonian University was founded on May 1, 1972. Its original seat was Collegium Śniadeckiego – a building in the Botanic Garden of the Jagiellonian University at 27 Copernicus Street. In 1964, for the 600-years anniversary of the Jagiellonian University, the Observatory was relocated to the historical '38th Fort Skala' from 1878, on the outskirts of Cracow.

The observatory has stationary optical telescopes: Cassegrain with a 50-centimeter mirror (manufactured by Zeiss), automatic 51-centimeter Dall-Kirkham (PlaneWave), Maksutov (35 centimeters, Zeiss), historical Grubb refractor (20 centimeters).

It is equipped with radiotelescopes: RT-16 with a 16-meter dish (under construction), a 15-meter educational RT-15, an 8-meter RT-8 which monitors the Sun and a 3-meter RT-3 of the Radio-HOU international school project. The observatory has a LOFAR station in Łazy near Bochnia which is a part of the international low radio frequency interferometer project.

Main research fields:

studies of stars, galaxies and comets, high energy astrophysics, relativistic astrophysics, cosmology, extragalactic astronomy, radioastronomy, space physics, solar observations



Cassegrain '50' telescope and RT-3 radiotelescope.
Credit: Goha Bankowicz



RT-8 radiotelescope.
Credit: Sebastian Kurowski



Grubb refractor from 1874.
Credit: Sebastian Kurowski

RT-15 radiotelescope.
Credit: Sebastian Kurowski



Major international projects:

ATHENA, CTA, Fermi-LAT, H.E.S.S., LOFAR,
LSST, Radio-HOU, SALT, WERA



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The Institute of Astronomy is part of Faculty of Physics, Astronomy and Informatics at the Nicolaus Copernicus University. It is located in Piwnice, 15 kilometres from Toruń.

The faculty consists of about 20 people actively participating in international research and development projects. Its main scientific activity includes radio studies of quasars, radiogalaxies and masers, searching for extrasolar planetary systems as well as observational and theoretical studies of the interstellar medium.

The most important instrument of the institute, the only of its kind in Central and Eastern Europe, is the 32-meter RT-4 radiotelescope. It is part of the European network which takes advantage of the most sophisticated astronomical observation techniques – very-long baseline interferometry. The institute is also home to rich optical instrumentation, including the largest Schmidt-Cassegrain telescope in Poland with a diameter of 90 centimeters and a historic Henry Draper's astrograph.

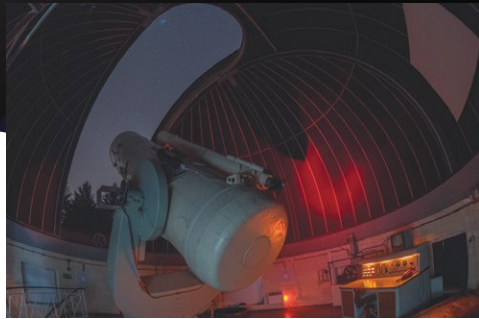
Main research fields:

stellar astrophysics, chemistry and physics of the interstellar medium, celestial mechanics, extrasolar planets, extragalactic astronomy and cosmology, high energy astrophysics



RT-4 radiotelescope.
Credit: K. Katarzyński/IA NCU

Schmidt-Cassegrain
telescope.
*Credit: P. Potępa/
nightsapes.pl*



Historic Henry
Draper's astrograph.
Credit: M. Czarnecki

Major projects:

Observational: VLBI, Torun Methanol Source Catalogue, Tracking Advanced Planetary Systems with Harps-N, Pennsylvania Toruń-Planet Search, Polarimetric survey of white dwarfs and stars with planetary systems, H.E.S.S., CTA, One Centimeter Receiver Array (OCRA), LOFAR
Numerical: Mechanic, Piernik MHD, Inhomog, Ramses-Scalav



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The Astronomical Observatory was founded in 1919 during the creation of Adam Mickiewicz University (AMU) and is located in a palace in the center of Poznań. The institute is not divided into divisions and research teams are formed for individual projects, grants or assignments.

The institute conducts research in stellar and galactic astrophysics and celestial mechanics, artificial satellite dynamics and Solar System astronomy. It is also involved in activity connected with space safety (monitoring Near Earth Objects and space debris).

The observatory has a system of optical telescopes PST1 at SRC PAS [CBK PAN] in Borowiec, PST2/RBT at Winer Observatory in the USA, PST3 in Chalin, working together as Global Astrophysical Telescope System (GATS). The institute is a member of consortium which aims to construct a 4-meter liquid mirror telescope (ILMT) and EUROPLANET 2024 consortium which aims to build an interdisciplinary platform for studies of planetary systems.

Main research fields:

stellar and galactic astrophysics, celestial mechanics,
artificial satellite dynamics, asteroids and other
Solar System objects, space safety



Buildings of Astronomical Observatory Institute, AMU. *Credit: AOI AMU*

PST2/RBT telescope at Winer Observatory, Arizona, USA.
Credit: AOI AMU



GATS PST3 – modern set of 5 optical telescopes with diameters from 30 to 70 centimeters and field of view from 0.5 to 3.2 degrees, equipped with its own computer cluster and scientific-CMOS type cameras. The set is dedicated to astrometric and photometric monitoring of Earth's artificial satellites and space debris.
Credit: AOI AMU

Major projects:

Global Astrophysical Telescope System (GATS), International Liquid Mirror Telescope (ILMT), projects for European Space Agency (including Space Situational Awareness), asteroid observation program at ESO, EUROPLANET 2024 Research Infrastructure Project, Gaia, SALT



Uniwersytet
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Astronomical Institute at University of Wrocław (AI UWr) consists of two departments: Department of Astrophysics and Astronomy and Department of Heliophysics and Space Physics. Structures of the institute include also Office for Didactics and Popularization of Astronomy 'Planetarium'. The institute's scientific and didactic staff consists of 18 scientific researchers, including 5 professors, 4 habilitated doctors and 9 academic teachers with a doctor's degree.

Astronomical Institute operates as a faculty institute and runs undergraduate and graduate studies in astronomy. It is responsible for conducting doctoral programs in astronomy and runs courses within the Doctoral School.

The institute currently supervises the Observatory in Białków which houses two instruments: a 60-centimeter reflector and a 53-centimeter coronagraph. The observatory takes part in international programs and campaigns for observing the Sun and stars.

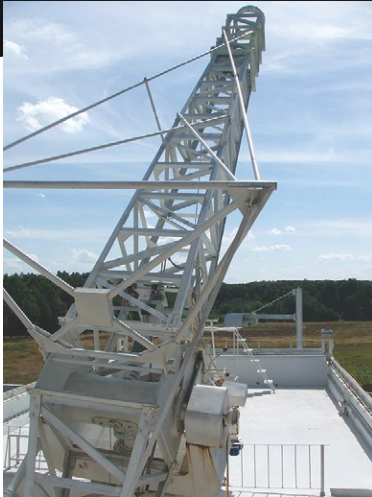
Astronomical Institute of University of Wrocław takes active part in popularization of astronomy and supporting educational facilities in Wrocław and Lower Silesia. It coauthors popularization events at Izera Dark-Sky Park.

Main research fields:

variable stars, asteroseismology, stellar bursts, solar flares, solar prominences, monitoring light pollution



Buildings of Astronomical Institute of University of Wrocław. *Credit: AI UWr archive*



53-centimeter coronagraph at Observatory in Biańków.
Credit: AI UWr archive



60-centimeter astrophysical telescope at Observatory in Biańków.
Credit: AI UWr archive

Major projects:

BRITE, Kepler, TESS, Gaia, UVSat, SALT, Proba-3,
PRE-EST, PL_RM22, SLED Spectrograph,
Solar Orbiter/Metis, Solar Orbiter/STIX, ALPS, SWA



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Astronomical Observatory of the University of Warsaw (AO UW) is a scientific facility that has functioned continuously for over two hundred years.

Outstanding level of scientific research determines the prominent position of the observatory both in the country and worldwide. The position of a global leader in large-scale photometric sky surveys was earned through the OGLE project. Astronomers from AO UW also actively take part in international scientific projects in high energy astrophysics, gravitational waves and major satellite missions. Educational activity is provided in degree courses in astronomy – undergraduate, graduate and doctoral studies, including individual studies. Outstanding graduate and doctoral students take part in research projects.

AO UW has two observing stations: northern station in Ostrowik, utilized mainly for didactic purposes, and southern station at Las Campanas Observatory in Chile with a dedicated 1.3-meter telescope equipped with one of the largest CCD mosaic cameras in the world.

Main research fields:

observational astronomy, time domain astronomy,
high energy astrophysics, gravitational waves



AOUW buildings
at Al. Ujazdowskie 4
in Warsaw.
Credit: AO UW



Northern observing station
of AO UW in Ostrowik.
Credit: AO UW



Southern observing
station of AO UW
at Las Campanas in Chile.
*Credit:
Ewa Zegler-Poleska*



Major projects:

OGLE, ASAS, LIGO/VIRGO, ET, H.E.S.S,
CTA, Planck, Gaia



Mt. Suhora
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Department of Astronomy of Cracow Pedagogical University which manages Mt Suhora Astronomical Observatory has existed in its current form since 1987. Its most significant research areas are studying phenomena in different types of variable stars, including pulsating variables at final stages of evolution and eclipsing systems. In the field of extragalactic astronomy observatory conducts optical and polarimetric observations of brightness changes in active galactic nuclei and quasars. Among Solar System objects studies of asteroids with selected orbital parameters are conducted.

Mt Suhora Observatory is located at 1,000 metres a.s.l. on the grounds of Gorce National Park. Such location allows for conducting astronomical observations under excellent conditions (for Polish climate). The number of observation nights oscillates between 120 and 150 per year and low background light (on average 21 mag/square arcsec) allows observations of faint objects.

The main instrument is a 60-centimeter Zeiss telescope equipped with a CCD camera at its primary focus and a few sets of filters for photometric and polarimetric observations. In 2020 a parallel 40-centimeter optical tube was added which allows for simultaneous photometric observations in different bands and polarimetric observations.

Aside from scientific research, Mt Suhora Observatory is used also for didactic purposes (e.g. observation training for students of other universities).



60-centimeter telescope of Mt Suhora Astronomical Observatory. *Credit: CPU*



Dome of Mt Suhora Astronomical Observatory during winter. *Credit: CPU*

Main research fields:

variable stars, active galactic nuclei,
quasars, asteroids

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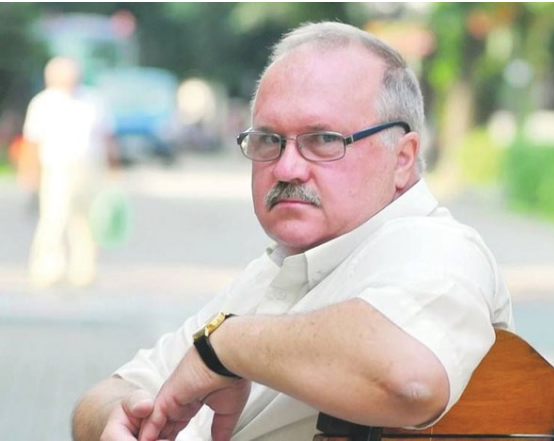
Researchers at Janusz Gil Institute of Astronomy conduct a wide range of research in astrophysics, from celestial mechanics through gravitational waves studies and pulsar astrophysics to studies of stars, particularly in terms of light polarization and physics of binary systems and brown dwarfs. Stars are observed using optical telescopes of Mt Suhora Astronomical Observatory, telescopes located in Turkey and in Canary Islands. Radio observations of pulsars are conducted using Polish radiotelescopes of LOFAR network as well as GMRT (India), Effelsberg (Germany) and GBT (USA). Results of observations are utilized in studying pulsar radiation mechanism (the institute conducts also theoretical studies in this field) and effects of radiowaves propagation on the interstellar medium. In the field of gravitational waves studies the institute deals with simulating formation processes of black hole binary systems.

Main research fields:

pulsar astrophysics, gravitational waves,
celestial mechanics, stellar astrophysics



Braniborska Tower in Zielona Góra
– original home of the institute.
Credit: M. Sendyk, IA UZG



Professor Janusz Gil (1957–2014),
patron of the Institute of Astronomy,
its many years' director and vice-rec-
tor at University of Zielona Góra.
Credit: Institute archive

Major projects:

LOFAR, POLGRAW, Virgo, CTA



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Space Research Centre of the Polish Academy of Sciences (SRC PAS) [CBK PAN] is an interdisciplinary scientific institute operating within 3rd Department of Polish Academy of Sciences. Established on September 29, 1976, the institute began functioning on April 1, 1977. The headquarters of Space Research Centre is located in Warsaw but the institute has divisions in Wrocław (Solar Physics Division), Borówiec (Astrogeodynamic Observatory) and Zielona Góra (Space Mechatronics and Robotics Laboratory and Dynamics Laboratory of Satellite Manipulators).

SRC PAS [CBK PAN] conducts scientific and technical research in space physics and physical and geodynamic studies of Earth and other planets. SRC's distinguishing feature is connecting research and construction activities: we design and build space instruments and analyze data collected with these instruments.

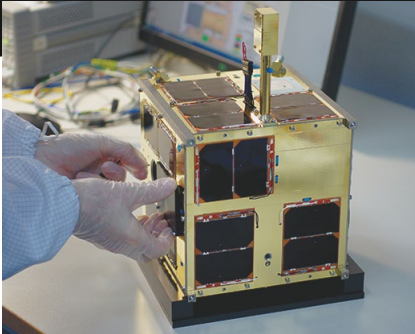
SRC constantly promotes Polish involvement in international space missions, actively strives for development of national space policy, initiates transfer of space technology from science to industry, educates staff for Polish space industry. SRC PAS [CBK PAN] cooperates with ESA, NASA and space agencies of Russia, China, India and Japan.

Main research fields:

Solar physics, study of planets and small Solar System bodies, interplanetary space physics and astrophysics, plasma physics, planetary geodesy and geodynamics, Earth observations, space weather



Warsaw by night as seen from the International Space Station (ISS).
Credit: SRC/NASA



BRITE-PL Lem satellite during assembly. *Credit: SRC PAS*



TVAC – Thermal vacuum chamber.
Credit: SRC PAS

Major projects:

PFS/MarsExpress, MERTIS/BeppiColombo, CaSSIS/ExoMars, KORONAS, STIX/SolarOrbiter, Cassini-Huygens, Rosetta, InSight, INTEGRAL, Herschel, DEMETER, TARANIS, PROBA 3, JUICE, ATHENA, LOFAR, BRITE



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Center for Theoretical Physics at Polish Academy of Sciences (CTP PAS) [CFT PAN] is one of the smallest and at the same time most dynamically operating facilities of Polish Academy of Sciences. CTP gathers researchers of different specializations, connected with mathematical and theoretical physics as well as space studies.

At CTP astronomical research is conducted in four areas: quasars and active galactic nuclei in reference to space distance scale (structure modelling, monitoring variability and application for distance measurements), accretion of matter on dense objects and black holes (physics of black holes and gamma ray bursts, magnetohydrodynamics of accretion disks), dark energy and dark matter in computational and observational cosmology (formation and evolution of galaxies and large scale structure of the Universe, determining fundamental cosmological parameters), relativistic and inhomogeneous cosmology (modelling relativistic effects in cosmological observations).

Presently there are 4 research groups with 5 permanent employees, 5 members with post-doc position, 6 postgraduates and about 10 master's degree fellows.

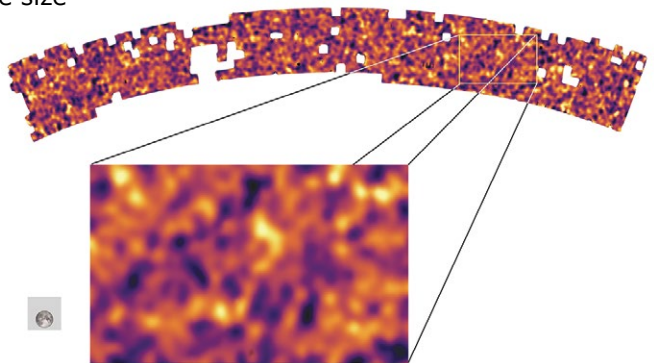
Main research fields:

quasars, active galactic nuclei, black holes physics,
high energy astrophysics, dark matter, dark energy,
large scale structure of the Universe



Artist's impression of a quasar.
Credit: ESO/M. Kornmesser

Close-up of a map fragment from KiDS survey, representing a section of the Universe 1.5 by 1 billion light years in size. Colors in this image correspond to different density of matter: yellow regions represent high density and purple – low density of matter. The grey square shows the size of a single 'image' in the KiDS survey, compared to the full moon at the same scale in the sky.
Credit: B. Giblin, K. Kuijken and KiDS team



Major projects:

KiDS, LOFAR, VRO LSST, ERC Synergy – UniverScale,
The VIRGO consortium for cosmological simulations, 4HS



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Institute of Nuclear Physics at Polish Academy of Sciences (INP PAS) takes part in a number of international observational projects in astrophysics. They are dedicated to studying ultra-high-energy cosmic rays (at Pierre Auger Observatory), gamma-ray astronomy (H.E.S.S., HAWC, CTA) and neutrino astronomy (Auger, Baikal-GVD). INP PAS conducts also theoretical studies.

The institute takes part in modernization of Pierre Auger Observatory – SSD scintillation detectors assembled at INP PAS will enhance measurement capability of the observatory. Baikal-GVD detector is currently under construction and the institute takes part in developing its calibration system. INP constructs prototypes of small Cherenkov telescopes for CTA and composite mirrors for medium-size telescopes. Observations of high energy gamma rays are conducted in H.E.S.S. and HAWC. Theoretical studies deal with models of particle acceleration in astrophysical objects and cosmic radiation transport processes.

Main research fields:

cosmic rays, gamma-ray astronomy,
neutrino astronomy, high energy astrophysics,
theoretical astrophysics



Mounting the SSD scintillation detector on one of the surface detector stations at Pierre Auger Observatory.
Credit: Pierre Auger collaboration



High Altitude Water Cherenkov gamma-ray observatory at the base of Sierra Negra volcano in Mexico.
Credit: J. Goodman/HAWC collaboration

SST-1M Cherenkov telescope prototype on test station at INP PAS, proposed for Cherenkov Telescope Array observatory.
Credit: J. Niemiec/INP PAS



Major projects:

Auger, H.E.S.S., HAWC, CTA, Baikal-GVD



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Space Radio-diagnostics Research Centre (SRRC UWM) was established as part of Faculty of Geodesy, Geospatial and Civil Engineering at University of Warmia and Mazury in Olsztyn in 2013.

Main scope of the center's activity are satellite studies connected with monitoring Earth's ionosphere with high temporal and spatial resolution as well as radio astronomy research. In the first area, SRRC takes advantage of Lamkówko Satellite Observatory and SRRC-governed Ionosphere Radiowave Propagation Center located on the grounds of Olsztyn Scientific and Technology Park.

With regards to radio astronomy research, its main instrument is a LOFAR interferometer station, completed in 2015 and part of International LOFAR Telescope. Olsztyn group deals with studies of pulsars, the Sun, space weather and cosmic masers and planetary nebulae.

SRRC research group is led by professor Andrzej Krankowski and consists of 10 researchers and 2 postgraduates.

Main research fields:

radioastronomy, astrophysics, ionosphere research



LOFAR radiotelescope antennas.
In the foreground: LBA antennas (Low Band),
in the background: High Band – HBA.
Credit: UWM



Bird's eye view of LOFAR radiotelescope. *Credit: UWM*

Major projects:

POLFAR – LOFAR, UV-Sat, SALT, ESO, ESA

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website: <https://fizyka.ujk.edu.pl>

Operating within the Institute of Physics at Jan Kochanowski University of Kielce (IP JKU), a group of astronomers and physicists conducts research of galaxies, galaxy clusters and small bodies in the Solar System. Research is conducted in cooperation with national and foreign scientific facilities.

Main research field in extragalactic objects is determining physical structure of various morphological types of galaxies and tracking their evolution. This is accompanied by analyses of how galactic environment and superstructures influence physical processes taking place in galaxies. The institute administers its own astronomical observatory used for astrometric observations of comets and asteroid photometry. The observatory takes part in variable stars observation campaigns.

The astronomical observatory together with the adjacent planetarium and stationary meteorite exposition are used for popularization of astronomy in the region.

Main research fields:

structure and evolution of galaxies, galaxy clusters,
cosmology, high energy astrophysics,
celestial mechanics, asteroids, comets



Astronomical observatory at the top of Faculty of Natural Sciences building at Jan Kochanowski University.
Credit: J. Krywult/JKU



Dome of the observatory and observation deck.
Credit: P. Kankiewicz/JKU

A fragment of meteorite exposition from the collection of K. Socha, housed in the JKU planetarium.
Credit: P. Kankiewicz/JKU



Major projects:

VIPERS, ATHENA, NICA

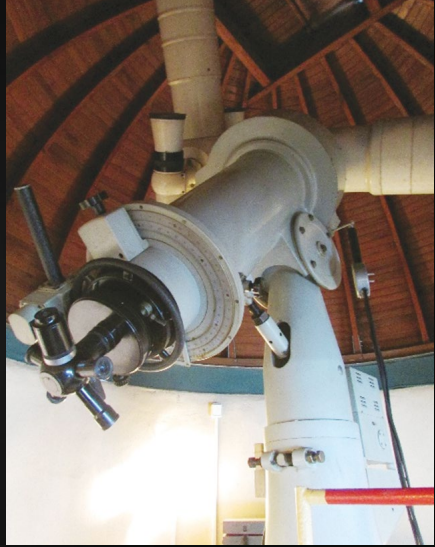
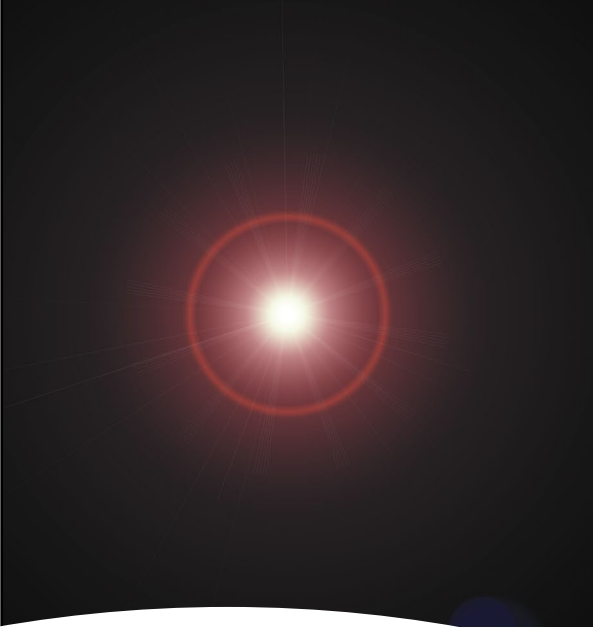
Astronomical Observatory University of Rzeszów (UR)

Contact details:
Institute of Physics
address: ul. Prof. Pigoń 1,
35-310 Rzeszów
phone: +48 851 85 48
e-mail: marwes@ur.edu.pl

Astronomical observatory was created in the 1970s at Pedagogical University in Rzeszów. From 2001 the observatory operates within the structures of University of Rzeszów. Its scientific activity deals with small bodies in the Solar System. Research focuses mainly on discovering the causes of cometary brightness outbursts. Due to unfavorable location of the observatory, observational research concentrates on monitoring solar activity. The instruments used for research include a 150/2250 Coude refractor and Coronado ST 90/800 Solar Max II solar telescope. In addition, as part of astronomy popularization program, lectures and sky shows are conducted. From the beginning the observatory was supervised by: docent doctor Roman Ampel, hab. doctor Stanisław Gąska, hab. doctor Stefania Grudzińska, hab. doctor Piotr Gronkowski – professor of University of Rzeszów. Presently, it is supervised by doctor Marcin Wesołowski. Observatory's scientific achievements include about 40 papers listed in the Ministry of Science and Higher Education and 40 papers on didactics of astronomy.

Main research fields:

theoretical astronomy, physical evolution of comets,
monitoring solar activity



150/2250 Coude refractor
in the observation dome.
Credit: UR



Modern astronomical dome.
Credit: UR



Coronado ST 90/800
SolarMax II solar telescope.
Credit: UR



UMCS

Department
of Theoretical Physics,
Institute of Physics
Faculty of Mathematics, Physics
and Computer Science

Maria Curie-Skłodowska University in Lublin

Contact details:

address: Pl. M. Curie-Skłodowskiej 1
20-031 Lublin

phone. +48 81 537 61 43, 81 537 61 88

e-mail: fizyka@umcs.lublin.pl

website: <https://www.umcs.pl>

Astronomical research at the Maria Curie-Skłodowska University in Lublin is conducted at the Department of Theoretical Physics of the Institute of Physics (Faculty of Mathematics, Physics and Computer Science). In addition to various physical studies, the department conducts research in the field of astrophysics, heliophysics (e.g. numerical simulations of wave processes in the Sun's atmosphere), black hole physics (e.g. thermodynamics of multidimensional black holes, late-time behavior of fields in black hole spacetime), cosmological models.

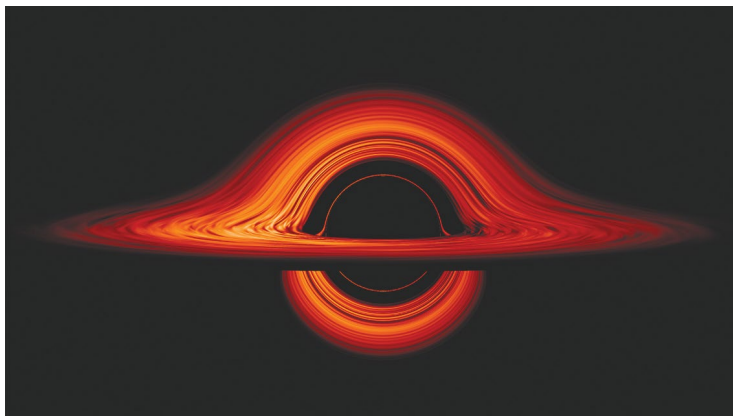
In the case of educating students, in the field of physics it is possible to choose the major in "theoretical physics and astrophysics".

Main research fields:

heliophysics, black holes, cosmology



Faculty of Mathematics, Physics and Computer Science MCSU in Lublin.
Credit: Szater/Wikipedia



Artist's impression presenting various elements of a black hole and its surroundings.

Credit: NASA Goddard Space Flight Center/Jeremy Schnittman



Department of Astrophysics and Theoretical Physics Faculty of Physics, University of Białystok (UB)

Contact details:

address: ul. K. Ciołkowskiego 1L,
15-245 Białystok

phone: +48 745 72 22

e-mail: fizyka@uwb.edu.pl

website: <https://physics.uwb.edu.pl>

The scope of astronomical research conducted by the department includes: gravitational waves astronomy (searching for gravitational waves in data collected by LIGO/Virgo/KAGRA detectors and decoding information about astrophysical objects based on gravitational waves created by them); relativistic celestial mechanics (movement and gravitational radiation in gravitationally interacting systems according to general relativity); astrophysics of active galactic nuclei and X-ray binaries (spectral analysis of accretion disk radiation, computer simulated formation of accretion disks, estimating masses of supermassive black holes, quasars with weak emission lines, tidal disruption events caused by black holes); astronomy didactics (developing practical observation tasks for students of physics and for high schools, designing and management of a didactic Astronomical Observatory from 1985 to 2015 and the currently under construction Observatory and Planetarium).

Main research fields:

gravitational waves astronomy, relativistic celestial
mechanics, high energy astrophysics,
astronomy didactics



Observatory and Planetarium under construction at University of Bialystok.

Credit: A. Branicki

Didactic Astronomical Observatory of University of Bialystok functioning from 1985 to 2015.

Credit: K. Gawryluk



Faculty of Physics building at University of Bialystok campus.

Credit: J. Kisielewski

Major projects:

Virgo, Einstein Telescope, Cherenkov Telescope Array, ATHENA-PL



NATIONAL
CENTRE
FOR NUCLEAR
RESEARCH
ŚWIERK

National Centre for Nuclear Research

Contact details:

addresses: ul. Andrzeja Sołtana 7,
05-400 Otwock,
ul. Pasteura 7, 02-093 Warszawa

phone: +48 22 27 31 001

e-mail: ncbj@ncbj.gov.pl

websites: <https://www.ncbj.gov.pl>
<https://www.ncbj.gov.pl/bp4>

NCNR [NCBJ] is the largest research institute in Poland. Research in astronomy and astrophysics is conducted mainly by Astrophysics Division but it involves also researchers from Theoretical Physics Division and High Energy Physics Division as well as physicists and engineers from applied research and development divisions. Research deals, among others, with different aspects of observational astrophysics: from evolution of galaxies and quasars through gamma-ray bursts up to stellar evolution. An essential field of activity is neutrino and cosmic ray physics. Research in cosmology deals with both theory and observations, including analyses of microwave background radiation maps, the large scale structure of the Universe in major sky surveys and searching for dark matter. Another important area are gravitational waves and multi-messenger astronomy. Scientists from NCNR take part in numerous international observational and experimental projects and construct instruments for space projects.

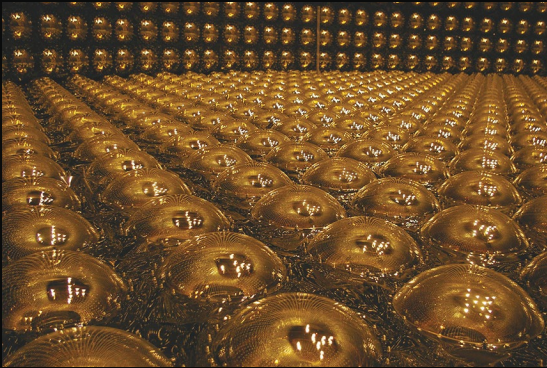
Main research fields:

observational and theoretical cosmology,
extragalactic astronomy, gravitational waves,
cosmic rays, astrostatistics, gamma-ray bursts,
neutrino physics, space engineering

NCNR staff designed and constructed electronic elements for, among others, POLAR space project which observed gamma-ray bursts onboard the Chinese space station.
Credit: D. Rybka/NCNR



Studying properties and evolution of galaxies along with their connection with cosmic dark matter field are among the primary research fields developed at NCNR.
Credit: W. Pearson (NCNR)/T. Goto/H. Matsuhara /HSC/AKARI-NEP



NCNR scientists observe cosmic neutrinos in the Super-Kamiokande experiment.
Credit: P. Mijakowski /NCNR

Major projects:

LSST, POLAR/POLAR-2, POLGRAW, Virgo, JEM-Euso, HELP, AKARI NEP, VIPERS, Super- and Hyper-Kamiokande

Astrophysics Division

Faculty of Physics and Applied Informatics

University of Lodz (UL)

Contact details:

address: ul. Pomorska nr 149/153
90-236 Łódź

phone: +48 42 635 56 45

e-mail: wlodzimierz.bednarek@uni.lodz.pl

website: <http://astro.uni.lodz.pl>

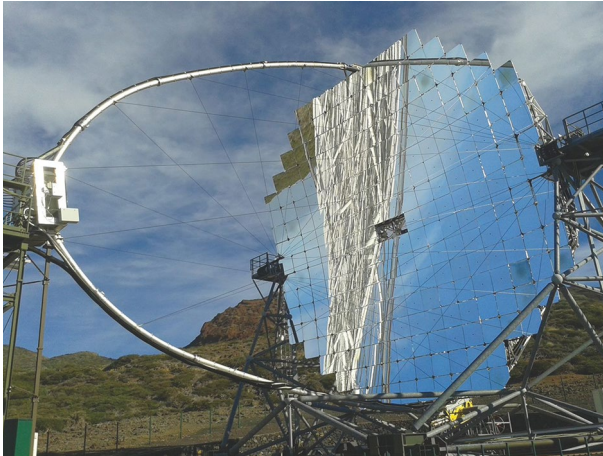
Astrophysics Division of the Faculty of Physics and Applied Informatics at University of Lodz continues studies of cosmic rays' origins initiated in the 1950s by professor Aleksander Zawadzki. Researchers study high energy processes through modelling emissions of gamma rays, X-rays and neutrinos from cosmic sources. For around fifteen years they have been observing gamma emissions using the MAGIC Cherenkov telescope system. In recent years they have participated in Cherenkov Telescope Array Collaboration (CTA/LST), which aims to construct and deliver the largest telescopes (Large Size Telescope – LST) for the CTA observatory. In the coming years CTA is expected to become the leading instrument for high energy gamma-ray astronomy, what will allow studying sources which are an order of magnitude fainter. We are taking part in developing data analysis methods for MAGIC and CTA as well as current initial technical observations with CTA/LST.

Main research fields:

high energy astrophysics: theory and observations
using Cherenkov telescopes



A view on Roque de los Muchachos Observatory, La Palma, Canary Islands, Spain. At center right LST1 telescope, in the background two MAGIC telescopes. Credit: D. Sobczyńska/Astrophysics Division, FPAI UL



MAGIC-II telescope (center right – mirrors, center left – camera). Credit: D. Sobczyńska/Astrophysics Division, FPAI UL

Major projects:

MAGIC, CTA/LST



Astronomical Observatory, Institute of Physics University of Opole (UO)

Contact details:

address: 'Niechcic' Student Dormitory
ul. Katowicka 87b, 12th floor
45-052 Opole
phone: +48 77 452 72 50
e-mail: astro@uni.opole.pl

Astronomical Observatory of Institute of Physics at University of Opole (IP UO) is located on the 12th floor of 'Niechcic' Student Dormitory which is one of the tallest buildings in Opole.

Its main telescope is a 14-inch Celestron SCT with f/10 lens speed and 6.3 focal reducer on a Celestron CGE paralactic mount. The telescope is equipped with an FLI 6503E CCD camera with a filter wheel. The second telescope is a 12-inch MEADE SCT f/11 with 6.3 focal reducer, installed on a fork mount. This telescope is fitted with SBIG ST7E camera with a CFW-8A filter wheel and a spotting scope with a CMOS camera. In addition, the observatory has SBIG SGS spectrograph with calibration lamps.

Astronomical shows are organized on the observation terrace for students and citizens of Opole. Lecture hall allows for practical exercises for students and lectures on astronomy. Observation room has computers dedicated for managing telescopes, weather station, an all-sky camera and bolide station.

Main research fields:

extragalactic astronomy and cosmology,
observations of variable stars, minor Solar System
objects and solar activity



Dome of the Astronomical Observatory of IP UO with a rare sliding roof.
Credit: Andrzej Czaiński/IF UO



Telescopes at Astronomical Observatory of IP UO.
Credit: Andrzej Czaiński / IF UO



Observation deck of Astronomical Observatory, IP UO.
Credit: Andrzej Czaiński/IF UO



Centre for Advanced Studies
in Astrobiology and Related Topics
(CASA* – US Group)
University of Szczecin (US)

Contact details:

address: ul. Wielkopolska 15,
70-451 Szczecin

phone: +48 90 444 1258

e-mail: ewa.szuszkiewicz@usz.edu.pl

website:

<http://grupybadawcze.usz.edu.pl/zespol-casa>

Astronomical research began in Szczecin at the beginning of the 21st century, in 2000, in the Institute of Physics at University of Szczecin (IP US). From the beginning, research was conducted on accretion disks and formation of planetary systems.

In 2003, CASA (Centre for Advanced Studies in Astrobiology and Related Topics) was created as a national center coordinated by CASA Group from University of Szczecin (CASA*-US Group), dealing with a different branch of interdisciplinary science – astrobiology. Szczecin Group's main areas of interest focus on formation and detection of extrasolar systems, space medicine, influence of ionising radiation on living organisms and stability of proteins. The group actively participates in operation of such organizations as European Astrobiology Network Association (EANA), EUROPLANET, European Astrobiology Institute (EAI) and International Academy of Astronautics (IAA).

Main research fields:

theoretical astronomy, astrophysics,
astrobiology, space medicine



Faculty of Physical Mathematical and Natural Sciences:
Institute of Physics, Institute of Mathematics.
Credit: Szczecinolog/Wikipedia



Logo of European Space Agency
PLATO mission. The aim of the mission
is searching for Earth-type planets
in ecospheres of other stars.
Credit: ESA

Major projects:

PLATO Consortium, SG 3.19/1.10 of the International Academy
of Astronautics, COST Action CA17139 EUTOPIA – European
Topology Interdisciplinary Action, POLFAR-LOFAR,
ATHENA-PL, AstroGrid-PL



Institute of Theoretical Physics and Astrophysics

Faculty of Mathematics, Physics and Informatics

University of Gdańsk (UG)

Contact details:

Zakład Spektroskopii

Atomowo-Molekularnej i Astrofizyki

address: ul. Wita Stwosza 57

80-308 Gdańsk

Within Division of Atomic and Molecular Spectroscopy and Astrophysics at University of Gdańsk astrophysics is explored by one researcher – habilitated doctor Piotr Gnaciński, a professor at University of Gdańsk. His research focuses on studying interstellar matter and kinematics of our Galaxy. Properties of atoms and molecules of interstellar matter are analyzed mainly based on ultraviolet spectra from HST (Hubble Space Telescope) and FUSE (Far Ultraviolet Spectroscopic Explorer). Research includes also Diffuse Interstellar Bands (DIBs) occurring in optical spectra due to possible complex organic molecules.

Another area of professor Gnaciński's research is determining and analysis of our Galaxy's rotation curve. Distribution of the rotation curve provides information on dark matter present in the Galaxy. Dark matter causes gravitational effects but its nature is unknown.

Main research fields:

ultraviolet and optical spectroscopy, interstellar matter, kinematics of the Galaxy



Buildings of Faculty
of Mathematics, Physics
and Informatics at University
of Gdansk.

Credit: P. Gnaciński



Presentation of Venus transiting
the solar disk (June 8, 2004)

– Piotr Gnaciński.

Credit: P. Gnaciński



Department of Theoretical Physics and Astrophysics Institute of Physics

Kazimierz Wielki University in Bydgoszcz (KWU)

Contact details:

address: ul. Powstańców Wielkopolskich
2, 85-090 Bydgoszcz

phone: +48 52 321 61 91

e-mail: fizyka@ukw.edu.pl

website: [https://fizyka.ukw.edu.pl/
jednostka/inst_fizyki](https://fizyka.ukw.edu.pl/jednostka/inst_fizyki)

Department of Theoretical Physics and Astrophysics employs one astrophysicist – dr hab. Tomasz Weselak, KWU professor. His research focuses on properties of atoms and molecules in the Interstellar Medium (ISM) based on spectroscopical data from UV to visible range and their possible connections with Diffuse Interstellar Bands (DIBs), with particular interest in:

- obtaining precise abundances of simple diatomics in the ISM basing on oscillator strengths of transitions in UV and visible range
- searching for relationships between abundances of simple molecules in the ISM
- searching for relationships between abundances of simple molecules and intensities of DIBs
- studying properties of DIBs
- analyzing the structure and properties of interstellar clouds

Main research fields:

ultraviolet and visible spectroscopy,
interstellar medium



The building which houses the Institute of Physics.
Credit: T. Weselak



L. & A. Birkenmajer Institute
for the History of Science
Polish Academy of Sciences (PAS)

Contact details:

address: ul. Nowy Świat 72,
00-330 Warszawa

phone: +48 22 6572746

e-mail: ihn@ihnpan.pl

website: <http://www.ihnpan.pl>

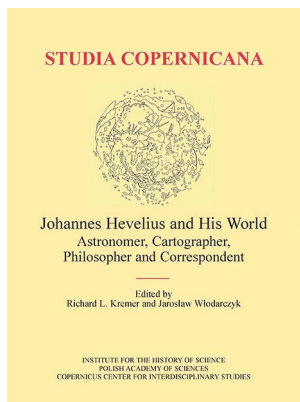
The Institute for the History of Science is a scientific facility of Polish Academy of Sciences (PAS). Among many fields of research developed in the institute, a prominent position is held by history of astronomy. The institute is the publisher of Nicolaus Copernicus' 'Collected works' (Latin, English, French, Polish and Russian editions) and the 'Studia Copernicana' series. Presently, a group of researchers from the institute take part in international cooperation to prepare a multivolume edition of Johannes Hevelius' correspondence under the patronage of Union Académique Internationale and Académie Internationale d'Histoire des Sciences. Research in history of astronomy spans all ages, beginning in ancient times; development of mathematical and observational astronomy, including history of instruments; history of astronomy in Poland; biographies of Polish astronomers; connections between astronomy and culture throughout the ages.

Main research fields:

history of astronomy, Copernican studies, critical reviews of sources for history of astronomy

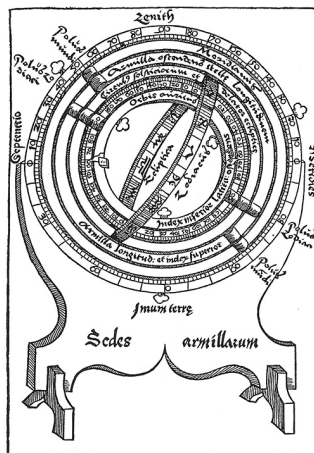


Fragment of Nicolaus Copernicus' book collection in Uppsala. *Credit: Owen Gingerich*



Vol. 44 of 'Studia Copernicana'.
The series has been published since 1970.
Credit: IHS PAS

Ring astrolabe from Nicolaus Copernicus era. The theory of this instrument has been developed in IHS PAS.
Credit: Jarosław Włodarczyk



Major projects:

Nicolaus Copernicus, Opera omnia, reception of heliocentric astronomy in early Middle Ages, critical review of Johannes Hevelius' correspondence, history of astronomy in Poland



Research group 'Theory of interaction,
computational techniques, methods
and models in data analysis'

August Chełkowski Institute of Physics
Faculty of Science and Technology
University of Silesia in Katowice (US)

Contact details:

address: ul. 75. Pułku Piechoty,
41-500 Chorzów

phone: +48 32 349-38-75

e-mail: ifiz.wnst@us.edu.pl

website: <https://us.edu.pl/instytut/ifiz>

Since 2020 Division of Astrophysics and Cosmology operates within the 'Theory of interaction, computational techniques, methods and models in data analysis' research group, continuing studies in astrophysics and cosmology also through active cooperation with national (National Centre for Nuclear Research, Warsaw) and foreign scientific facilities (Peking University Institute for Astronomy, Wuhan University) and publishing research in reputable scientific magazines.

Main research fields:

gravitational lensing, gravitational waves,
observational cosmology, neutron star models,
applying statistical methods for analyzing properties
of dense nuclear matter and neutron stars



Institute of Physics, University of Silesia.
Credit: Aleksandra Piórkowska-Kurpas/US



Planetarium of Faculty of Science and Technology Jan Długosz University in Częstochowa (JDU)

Contact details:

address: Al. Armii Krajowej 13/15,
42-200 Częstochowa

phone: +48 533 946 576,
34 361 49 18, ext. 298

e-mail: m.nowak@ujd.edu.pl

website: <http://kino-sferyczne.pl/>

Presently the university does not conduct scientific research in astronomy but it has its own planetarium.

The planetarium of Faculty of Science and Technology at Jan Długosz University of Częstochowa has functioned continuously since September 23, 2006. When it was opened it was the first digital planetarium in Poland. It was equipped with Digistar 3SP system delivered by Evans and Sutherland, Salt Lake City, Utah, USA. From its beginning the planetarium has enjoyed much interest from its visitors. Organised groups are preferred but individuals may also take part in planetarium shows.

The shows are directed to wide audiences. From kindergarteners through school children, teenagers and students, up to seniors. Shows begin with presentation of current sky above Częstochowa and constellations typical of the current season. This is followed by the main show. Planetarium organizes astronomical contests for children and teenagers and from 2021 also for seniors.



Dome of the Planetarium.
View from the roof
of Faculty of Science
and Technology at Jan
Długosz University
of Częstochowa,
facing west.
*Credit: Marek Nowak/
private archive*



Bogdan Wszółek (initiator and coordinator of Digistar 3 system purchase)
with Marek Nowak (first trained operator of Digistar 3 system) next to
the planetarium projector during assembly of Digistar 3SP.
Credit: Marek Nowak/private archive

Contact details:

address: ul. Trzy Lipy 3 (Budynek C),
80-172 Gdańsk

phone: +48 58 500 87 60

e-mail: sekretariat@polsa.gov.pl

website: <https://polsa.gov.pl>

Polish Space Agency (POLSA) was established under the Act of September 26, 2014. Its objective is to support development of space industry, research, use of space, development of space technology, including satellite engineering, using research and its results for utility, economic, defense, state security and research purposes. POLSA cooperates with international agencies and state administration in terms of space research and exploitation. The headquarters of the agency is located in Gdańsk, it also has local branches in Warsaw and Rzeszów. The agency has a subsidized annual budget of 26 million PLN.

POLSA conducts projects in accordance with the Polish Space Strategy adopted in 2017, including national space situational awareness system, applications program for public administration and education (e.g. Future Space, Entrusted, Sat4envi). It also works for the development of satellite technologies in everyday life, including communication, environmental monitoring, agriculture, forestry, land and sea transport or crisis management.

One of the important tasks of POLSA is also to support Polish industry in order to increase competitiveness on the European market and to facilitate the acquisition of contracts by domestic companies under international organisations, especially European Space Agency and European Commission. In addition, POLSA participates in the preparation of the National Space Program, which will include a number of instruments and mechanisms complementary to Poland's involvement in ESA missions and programs.

Contact details:

Current contact details are available
on the website (chairman or secretary)

<http://www.ka.pan.pl>

The Astronomy Committee at Polish Academy of Sciences (PAS) was established in 1952. It functions within Division III: Mathematics, Physics, Chemistry and Earth Sciences of PAS. Its tasks include all types of activities supporting development of astronomy and taking advantage of its achievements. It also functions as a National Committee for Cooperation with International Astronomical Union. Astronomy Committee designates the Polish representative for the international consortium publishing 'Astronomy & Astrophysics' and annually applies for publication funds.



Staszic Palace in Warsaw is a headquarters for a few institutes of the Polish Academy of Sciences. A monument of Nicolaus Copernicus stands in front of the building. *Credit: Tilman2007/Wikipedia (building) and Astronarium (monument)*

Polish participation in international organizations

International Astronomical Union (IAU)



The International Astronomical Union (IAU) is a worldwide organization of professional astronomers. It was established in 1919 and Poland has been its member since 1922. Presently, IAU has around 12,000 individual members and around 80 national members.

IAU supports international cooperation in astronomical research, organizes conferences, publishes scientific materials. IAU has also established offices for education and popularization of astronomy and runs global initiatives in this area.

Poland is represented in IAU by Astronomy Committee of Polish Academy of Sciences. There are 165 individual members of IAU from Poland.

Website: <https://www.iau.org>

Contacting Polish representatives of IAU:

- National Committee: current details are available on the website: <https://www.iau.org/administration/membership/national/members/23/>
- National Outreach Coordinator (IAU NOC): iau@pta.edu.pl
- National Astronomy Education Coordinator Team (IAU NAEC): iauaastroedu@pta.edu.pl
- National E-ROAD Representative: astro4dev@pta.edu.pl, e-road@pta.edu.pl

European Astronomical Society

The European Astronomical Society (EAS) was established in 1990. Its task is to coordinate activities of national societies on European level. Among other things, it organizes a yearly major scientific conference: European Astronomical Society Annual Meeting. Poland is represented in the EAS by the Polish Astronomical Society.



Website: <https://eas.unige.ch>



European Southern Observatory (ESO)

European Southern Observatory (ESO) was established by the 1962 ESO Convention. The organization's mission is to foster cooperation between states in construction and use of large research instruments which would otherwise be beyond the capabilities of individual states. ESO has observatories in the Atacama Desert in Chile (La Silla, Paranal), represents Europe in the ALMA radiotelescope network and constructs Extremely Large Telescope (ELT) with a 39.3-meter primary mirror. The organization has at its disposal a budget of around 233 million euros (2019).

Website: <https://www.eso.org>

Contact with Polish ESO representatives:

- List of current representatives at ESO Council is available on the website: <https://www.eso.org/public/about-eso/committees.html> (under 'Council' link)
- National Coordinator for ESO Science Outreach Network: eson-poland@eso.org



VLT telescopes preparing for observation.

Credit: ESO/B. Tafreshi (twanight.org)

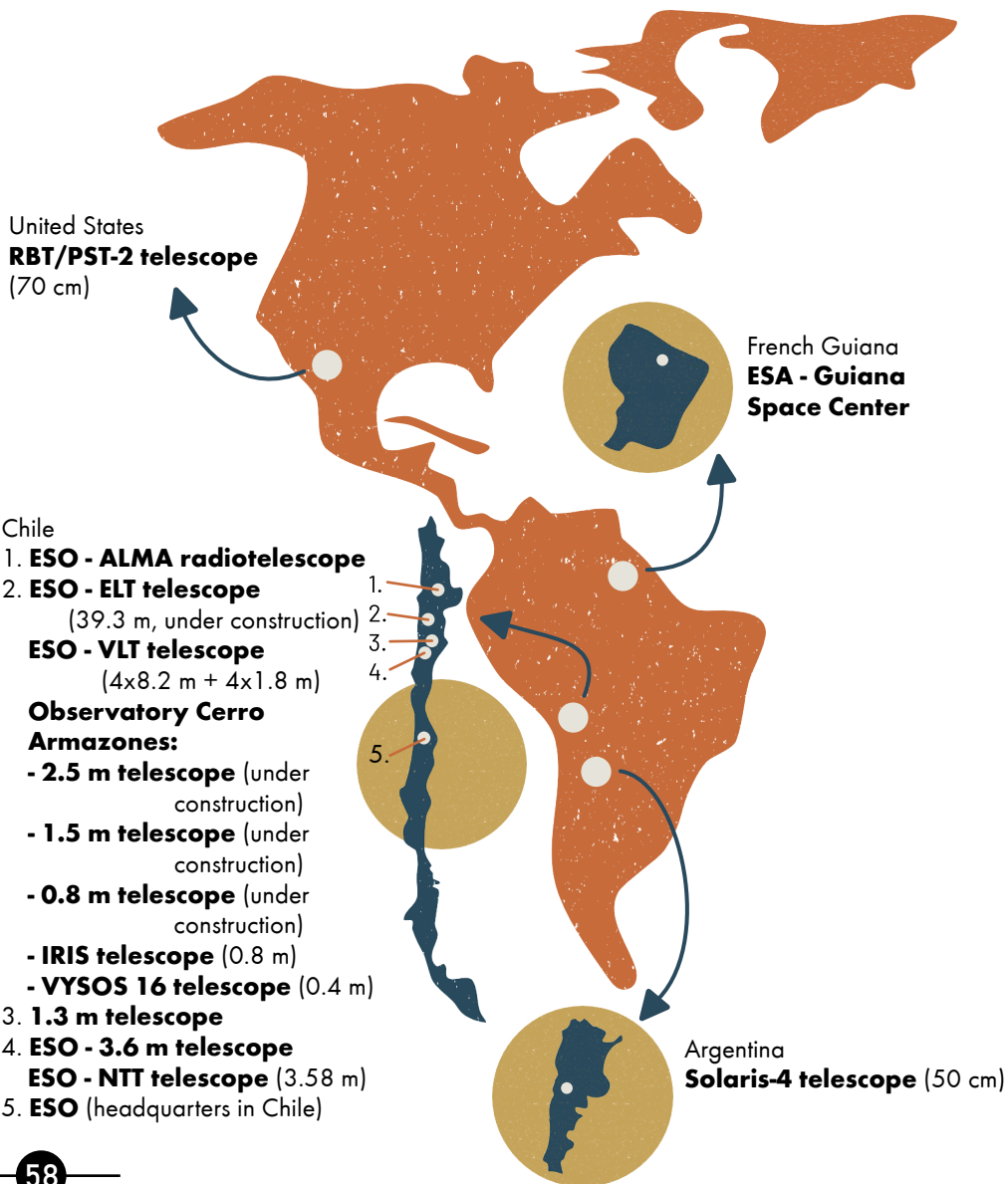


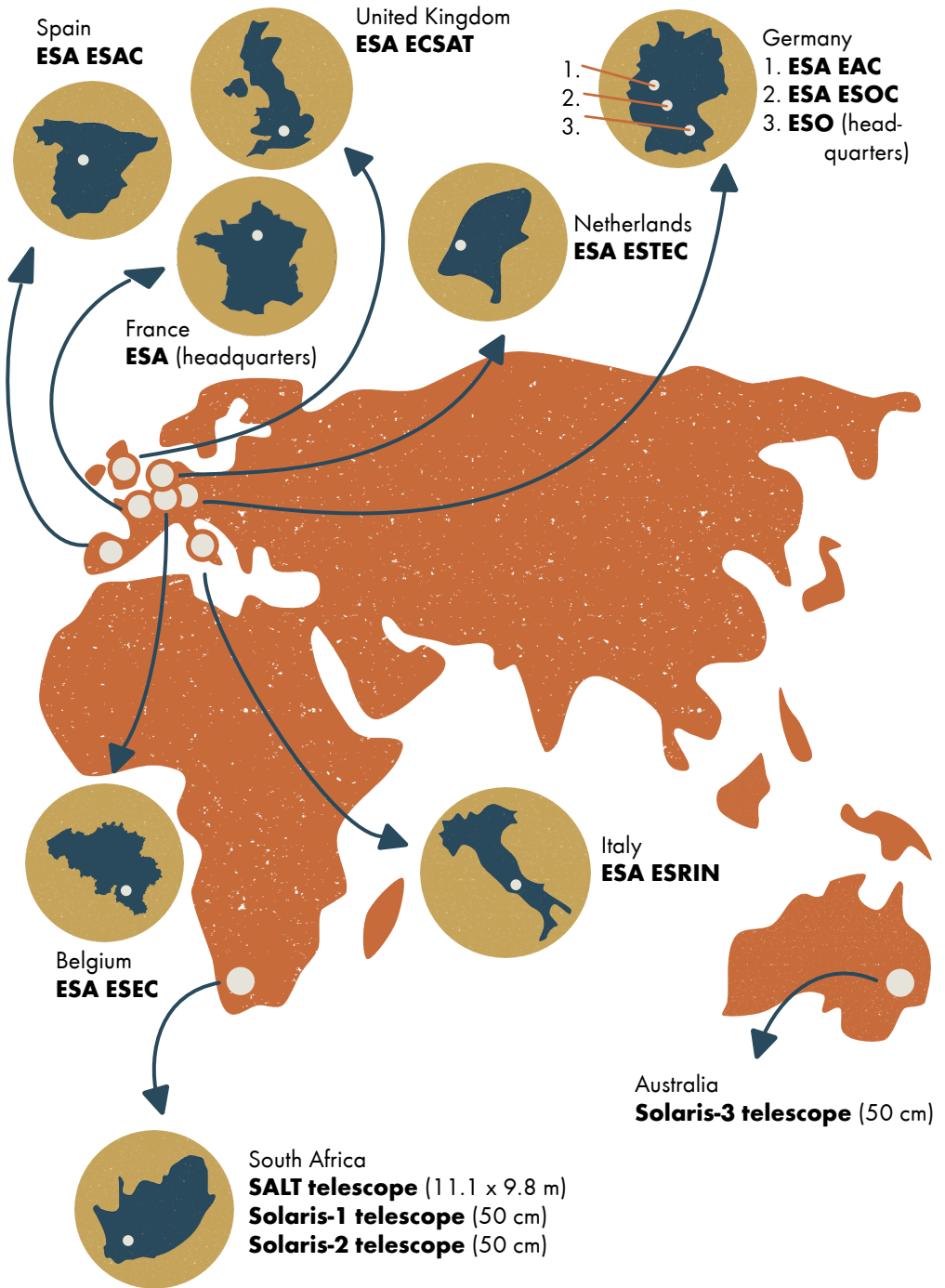
European Space Agency (ESA)

International organization associating European states was established by a 1975 convention. Its aim is exploration of space. ESA uses also satellites to conduct scientific research, including astronomical research. The agency has a yearly budget of 6.68 billion euros (2020). Poland officially became a member of ESA in 2012 but cooperation with the agency started earlier.

Website: <https://www.esa.int>

Polish telescopes abroad and ESA/ESO facilities





Studying astronomy

Bachelor and Masters studies

Studying astronomy in Poland has two stages: undergraduate studies (Bachelor) and graduate studies (Masters) and last five years altogether. Astronomy is present as a separate degree course at the following universities:

- Jagiellonian University, Cracow – <https://www.uj.edu.pl>
- Adam Mickiewicz University, Poznań – <https://amu.edu.pl>
- Nicolaus Copernicus University, Toruń – <https://www.umk.pl>
- University of Warsaw – <https://www.uw.edu.pl>
- University of Wrocław – <https://uni.wroc.pl>
- University of Zielona Góra – <https://www.uz.zgora.pl>

PhD studies

There are also Doctoral Schools – this form was introduced in 2019 replacing doctoral studies. The list of Doctoral Schools where you can get a PhD in astronomy:

Graduate School of Physics and Chemistry – National Centre for Nuclear Research, Institute of Nuclear Chemistry and Technology, <http://gradschool.ncbj.gov.pl>

Academia Copernicana – Nicolaus Copernicus University in Toruń, <https://www.ac.umk.pl>

Interdisciplinary Doctoral School – University of Warsaw, <https://szkolydoktorskie.uw.edu.pl/msd>

GeoPlanet Doctoral School – Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, co-hosts include: Space Research Center of the Polish Academy of Sciences, Center for Theoretical Physics of the Polish Academy of Sciences, <https://geoplanetschool.pl>

Doctoral School of Exact Sciences – Adam Mickiewicz University, Poznań, <https://sci.amu.edu.pl>

Doctoral School of Exact and Natural Sciences – Jagiellonian University, Cracow, <https://science.phd.uj.edu.pl>

Doctoral School of Exact and Natural Sciences – Nicolaus Copernicus University in Toruń, <https://www.phd.umk.pl/ast>

Doctoral School of Exact and Natural Sciences – University of Warsaw, <https://szkolydoktorskie.uw.edu.pl/sdnsip>

Doctoral School of Exact and Technical Sciences – University of Zielona Góra, <http://www.sd.uz.zgora.pl/index.php?szkoła-doktorska-nauk-ściślych-i-technicznych>

Doctoral School of the Adam Mickiewicz University – Adam Mickiewicz University, Poznań, <https://amu.edu.pl/kandydaci/doktoranckie>

Doctoral School of the University of Wrocław – University of Wrocław, <https://uni.wroc.pl/doktorat/szkoła-doktorska>

Warsaw PhD School in Natural and BioMedical Sciences – Center for Theoretical Physics PAS (cosmology), <https://warsaw4phd.eu>

Educational and school observatories

There are many educational observatories in Poland. These days, new institutions of this type are being built by local governments, for example as part of civic budgets. We present below a few examples of educational observatories from various regions of the country. More locations are shown on the map on page 62.

Astrobaza (Astrobaza) – in the Kuyavian-Pomeranian Voivodeship there are several astronomical observatories built in schools as part of the Astrobaza project: Brodnica, Dobrzyń nad Wisłą, Gniewkowo, Golub-Dobrzyń, Gostycyn, Inowrocław, Jabłonowo, Kruszwica, Radziejów, Rypin, Świecie, Unisław, Żnin, Zławieś Wielka.

Youth Astronomical Observatory in Niepołomice – the facility was established in 1964 r. Website: <https://moa.edu.pl>

Queen Jadwiga Astronomical Observatory in Rzepiennik Biskupi – private observatory. Its construction began in 1998. It has optical telescopes and radio telescopes. Website: <http://oajadwiga.pl>

Olsztyn Planetarium and Astronomical Observatory – apart from the planetarium, the facility has an observatory located in a 19th-century water tower, opened in 1979. Website: <https://planetarium.olsztyn.pl>

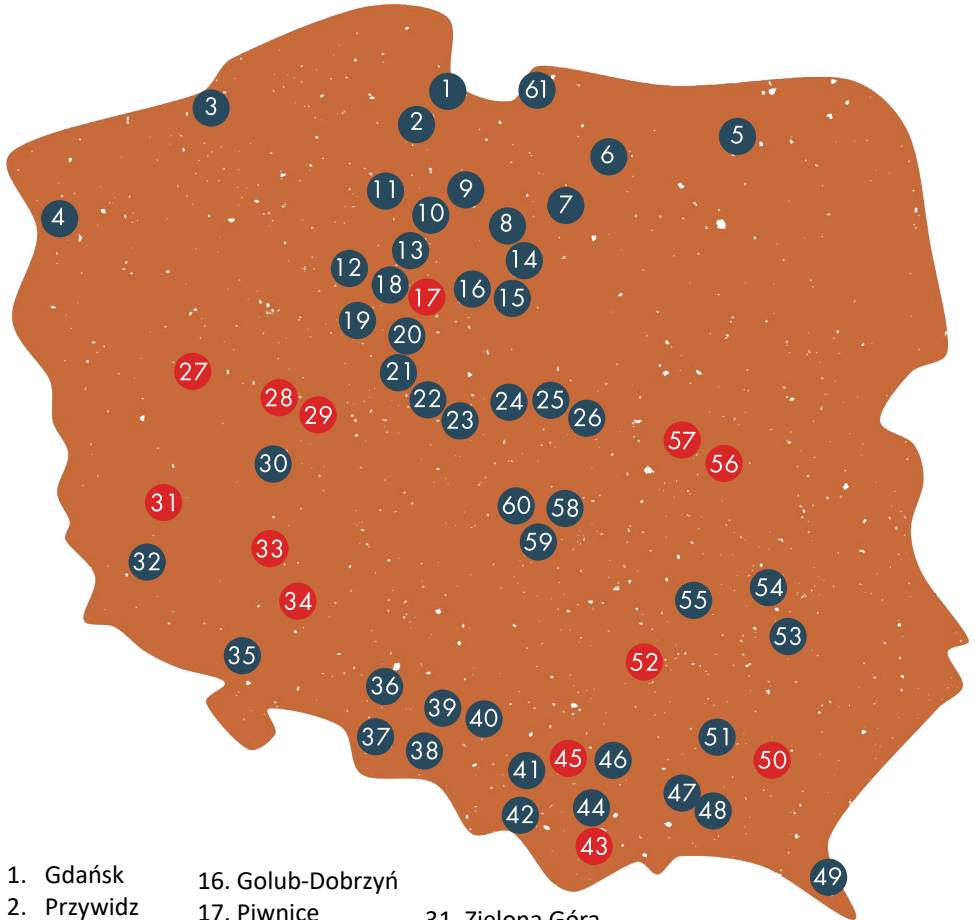
Astronomical Observatory in Truszczyń – a private observatory operating since 2012, the Nicolaus Copernicus Foundation runs its projects here. Website: <https://www.facebook.com/ObserwatoriumTruszczyń>

Astronomical and Cultural Center in Niedźwiady – run by the Pałucko-Pomeranian Astronomical and Ecological Association 'Local Group'. The center has a 60-centimeter telescope and hosts annual meetings of astronomy amateurs (OZMA). Website: <https://www.ppsae.pl>

Tadeusz Banachiewicz Astronomical Observatory at Mt Lubomir – built in 2007 by the Wiśniowa commune on the site of a pre-war mountain observatory. Website: <http://weglowka.pl/obserwatorium>

Astrobaza in Radom – the observatory was established as part of the 2015 Civic Budget, it started operating in 2016. Website: <http://astrobaza.radom.pl>

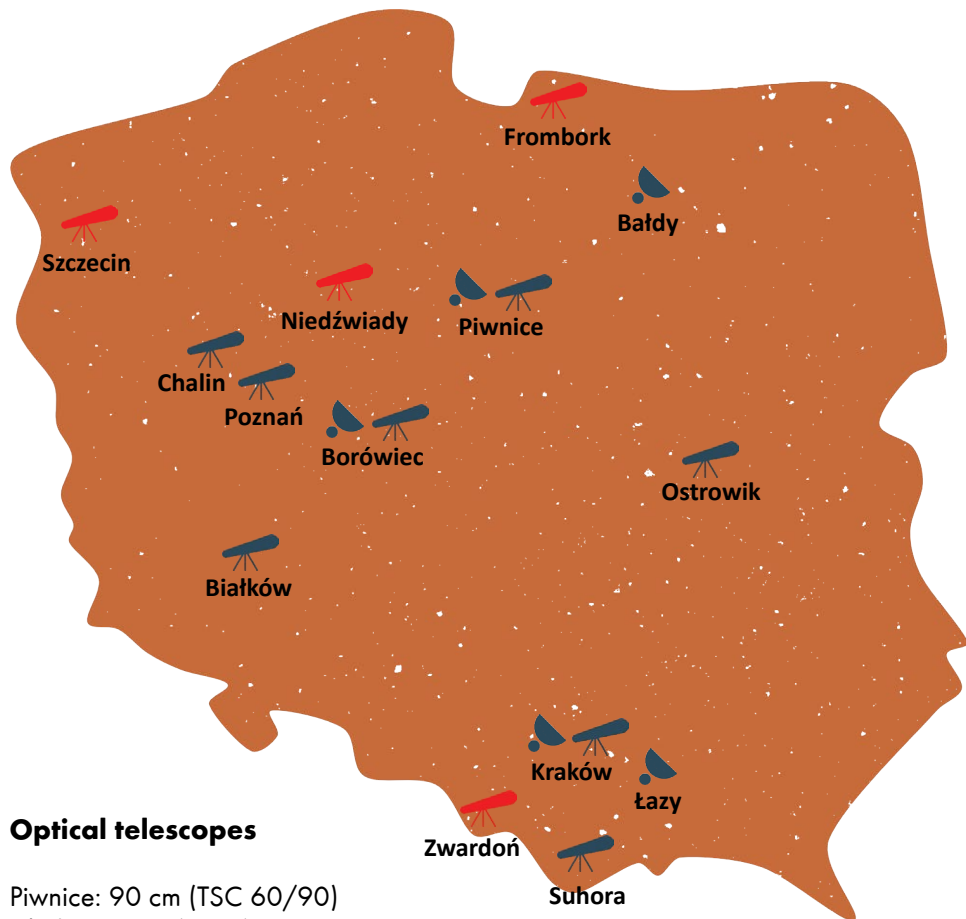
Map of Poland with locations of observatories



- | | | | | |
|------------------------|-----------------------|------------------------|------------------------|--------------|
| 1. Gdańsk | 16. Golub-Dobrzyń | 31. Zielona Góra | 43. Suhara | 55. Radom |
| 2. Przywidz | 17. Piwnice | 32. Żagań | 44. Lubomir | 56. Ostrowik |
| 3. Koszalin | 18. Zławieś Wielka | 33. Białków | 45. Kraków | 57. Warszawa |
| 4. Szczecin | 19. Żnin | 34. Wrocław | 46. Niepołomice | 58. Rogów |
| 5. Giżycko | 20. Gniewkowo | 35. Wałbrzych | 47. Rzepiennik Biskupi | 59. Bukowiec |
| 6. Olsztyn | 21. Inowrocław | 36. Opole | 48. Jasło | 60. Łódź |
| 7. Trzuszczyny | 22. Kruszwica | 37. Głogówek | 49. Otryt | 61. Frombork |
| 8. Jabłonowo Pomorskie | 23. Radziejów | 38. Czernica | 50. Rzeszów | |
| 9. Grudziądz | 24. Włocławek | 39. Kamieniec | 51. Radomyśl Wielki | |
| 10. Świecie | 25. Dobrzyń nad Wisłą | 40. Dąbrowa Górnicza | 52. Kielce | |
| 11. Gostycyn | 26. Płock | 41. Sulkowice Bołęcina | 53. Urzędów | |
| 12. Niedźwiady | 27. Chalin | 42. Sopotnia Wielka | 54. Puławy | |
| 13. Unisław | 28. Poznań | | | |
| 14. Brodnica | 29. Borówiec | | | |
| 15. Rypin | 30. Kościan | | | |
- observatories of scientific institutes
● educational/ amateur/ private observatories

If any observatory is missing on the map, please contact us at obserwatoria@pta.edu.pl

Largest telescopes in Poland



Optical telescopes

Piwnice: 90 cm (TSC 60/90)

Chalin: 70 cm (PST3)

Frombork: 65 cm

Białków: 60 cm

Borówiec: 60 cm (laser station)

Niedźwiady: 60 cm (Roland)

Ostrowik: 60 cm

Piwnice: 60 cm

Suhora 60 cm

Szczecin: 60 cm (SOWA)

Białków: 53 cm (coronagraph)

Kraków: 51 cm

Kraków: 50 cm

Zwardoń: 51 cm

Borówiec: 2 x 50 cm (PST1)

Poznań: 50 cm (SkyLab)

Radio telescopes

Piwnice: 32 m (RT-4, RT-32)

Piwnice: 15 m (RT-3, RT-15)

Kraków: 15 m (RT-15)

Kraków: 8 m (RT-8)

Bałdy: LOFAR

Borówiec: LOFAR

Łazy: LOFAR



Popularization of astronomy

Planetariums

Poland has over a dozen stationary planetariums and a considerable number of mobile planetariums. The following list presents all stationary planetariums (dome diameter, year of start).

Chorzów – The Silesian Planetarium (23 m, 1955)

Częstochowa – Planetarium of the Faculty of Science & Technology of Jan Długosz University in Częstochowa (8 m, 2006)

Gdynia – Planetarium of the Polish Naval Academy of the Heroes of Westerplatte in Gdynia (8 m, 1975)

Gdynia – Antoni Ledóchowski Planetarium of the Gdynia Maritime University (8 m, 1979)

Frombork – Planetarium in Nicolaus Copernicus Museum in Frombork (8 m, 1973)

Grudziądz – Nicolaus Copernicus Planetarium and Astronomical Observatory in Grudziądz (6 m, 1972)

Kielce – Astronomical Observatory and Planetarium in Kielce (5 m, 2005)

Łódź – Ary Sternfeld Planetarium and Astronomical Observatory (6 m, 1984)

Łódź – Planetarium EC1 (18 m / 14 m, 2015)

Międzyzdroje – Międzyzdroje Planetarium (7 m, 2011)

Niepołomice – Planetarium in Youth Astronomical Observatory in Niepołomice (8 m, 2010)

Olsztyn – Olsztyn Planetarium and Astronomical Observatory (15 m, 1973)

Potarzyca – Andrzej Owczarek Planetarium in J. Hevelius Junior High School in Potarzyca (5 m)

Piotrków Trybunalski – Planetarium in Bolesław Chrobry 1st Secondary School in Piotrków Trybunalski (6 m, 1981)

Siedlce – “Sky of Prus” Planetarium in Bolesław Prus 1st Secondary School in Siedlce (5,4 m, 2016)

Szczecin – Planetarium in Maritime Academy in Szczecin (5 m, 1979)

Szczecin – Prof. Jerzy Stelmach Maritime Science Centre (9 m, opening planned for 2021)

Toruń – “Planetarium – Toruń” Space Promotion Centre (15 m, 1994)

Warsaw – Planetarium in National Museum of Technology in Warsaw (8 m, 1972, the museum is undergoing organizational changes and reconstruction, the opening of planetarium is planned for 2023)

Warsaw – Planetarium of the Copernicus Science Centre (16 m, 2011)

Wrocław – Planetarium in Astronomical Institute of the Wrocław University (8 m)

Zielona Góra – Venus Planetarium in Kepler Science Centre (10 m, 2015)

Planetariums in Poland



Other institutions:

European Space Education Resource Office (ESERO) in Warsaw
Hevelianum in Gdańsk

Quality Certificate for Planetariums

Polish Astronomical Society awards the 'Quality Certificate for Planetariums' recommending the best planetariums. This quality sign represents high didactical and substantive level of a given facility.

Details: <https://www.pta.edu.pl/certyfikat>



Amateur astronomy

Astronomy is very actively fostered by many amateur astronomical organizations, on national, regional and local level. Among these, the largest and oldest organization is Polish Society of Amateur Astronomers [PTMA] which was established in 1919 (1921). Below there are a few examples of amateur activity in the field of astronomy and space.

Polish Society of Amateur Astronomers [PTMA] has 19 regional divisions and 9 theme sections, <https://ptma.pl>

Comet and Meteor Workshop – runs Polish Fireball Network (cameras registering bright meteors), deals with comets and meteors, <https://www.pkim.org>

Polish Meteorite Society – associates people interested in meteorites, <http://www.ptmet.org.pl>

Almukantarat Astronomy Club – organization of astronomy camps for school children and youth, <https://www.almukantarat.pl>

Polaris-OPP Association – protection of dark skies and other educational activities, <http://www.polaris.org.pl>

Nicolaus Copernicus Foundation – popularization of Nicolaus Copernicus' works, runs various educational projects.

Polish Astrobiological Society – group of scientists in various fields, dealing with astrobiology, <https://astrobio.pl>

WroSpace Society – organizes World Space Week Wrocław, <https://worldspaceweek.pl>

European Space Foundation – organizes Martian rover competitions for students (ERC Space and Robotics Event, also known as European Rover Challenge), <https://roverchallenge.eu>

Polish Rocket Society – associates people interested in rocket models, organizes Meteor Festival, <http://www.rakiety.org.pl>

Astronomical media

Scientific

Proceedings of the Polish Astronomical Society

Series of conference publications published by Polish Astronomical Society. The series is issued in English.

ISSN 2545-1022, <https://www.pta.edu.pl/proc>

Acta Astronomica

Scientific magazine about astronomy published by Polish Astronomy Foundation. It has been issued since 1925. The magazine is published in English. ISSN 0001-5237.

<http://acta.astro.u.edu.pl>

Popular science

Urania – Postępy Astronomii

Main Polish popular science magazine about astronomy and space. It is published jointly by Polish Astronomical Society [PTA] and Polish Society of Amateur Astronomers [PTMA]. The magazine has been issued since 1919 (1922). ISSN: 1689-6009.

<https://www.uraniamagazine.edu.pl>

Astronarium

Popular science television series about astronomy and space research produced by Polish Astronomical Society and Polish Television with the support from Ministry of Science and Education.

The series has been released since 2015 on television and YouTube <https://www.astronarium.pl>, <https://www.youtube.com/AstronariumPL>

Other magazines:

Meteoryt (Meteorite), Astronomia (Astronomy), Świat Wiedzy (World of Knowledge), Kosmos (Space), Delta

Portal sites (original names):

Urania, Astronet, Puls Kosmosu, Space24, Kosmonauta, Astropolis, AstroGPS

YouTube channels (original names):

Astronarium, Astrofaza, Urania TV, Astrolife, Radio-teleskop.pl, Z głową w gwiazdach

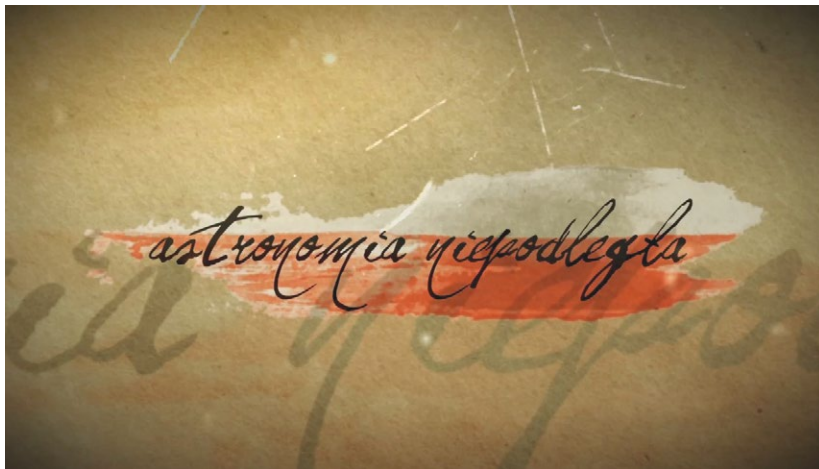
Astronomical contests:

Astronomy Olympiad [Olimpiada Astronomiczna], OMSA, Astrolabe [Astrolabium], AstroCamera

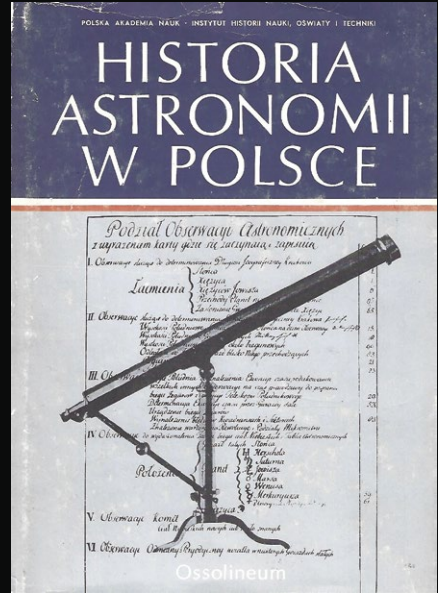
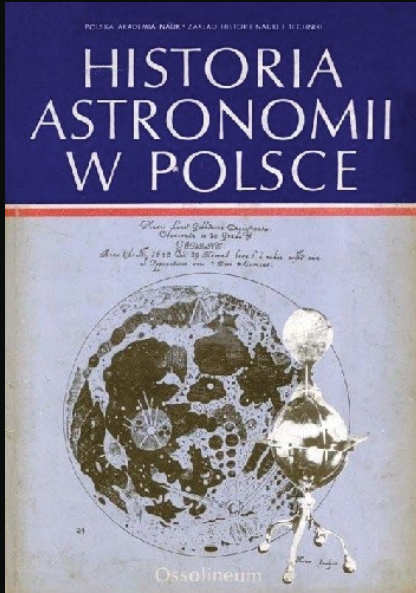
A brief history of astronomy in Poland

Beginnings of astronomy in Poland date back to medieval times. The timeline on pages 70–71 presents selected dates, focusing mainly on organisational and infrastructural aspects along with the 20th and 21st century.

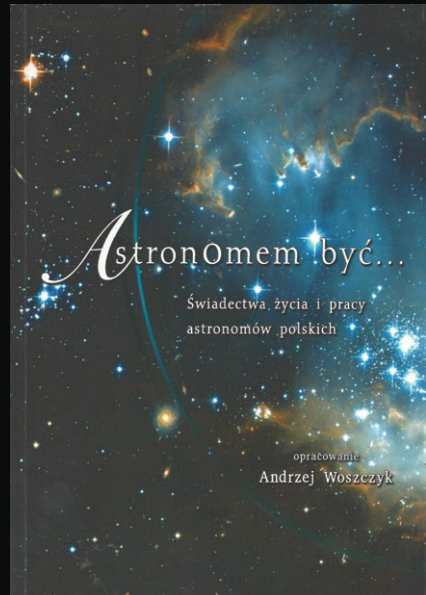
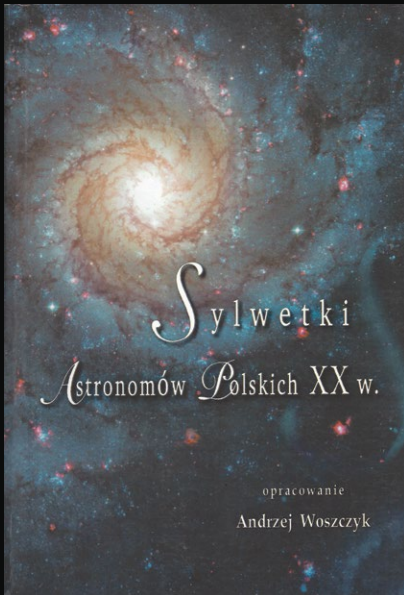
Recent history of Polish astronomical facilities and institutes, since regaining independence by Poland in 1918, is presented in the TV series 'Independent Astronomy' ['Astronomia niepodległa'], which is also available on YouTube in Astronarium channel (English subtitles are available). A broader and more detailed view on the history of Polish astronomy was presented in the following books: 'History of astronomy in Poland' ['Historia astronomii w Polsce'], 'To be an astronomer... the lives and works of Polish astronomers' [Astronomem być... Świadcstwa życia i pracy astronomów polskich] and 'Portraits of Polish 20th century astronomers' [Sylwetki astronomów polskich XX w.]. All these books are in Polish.



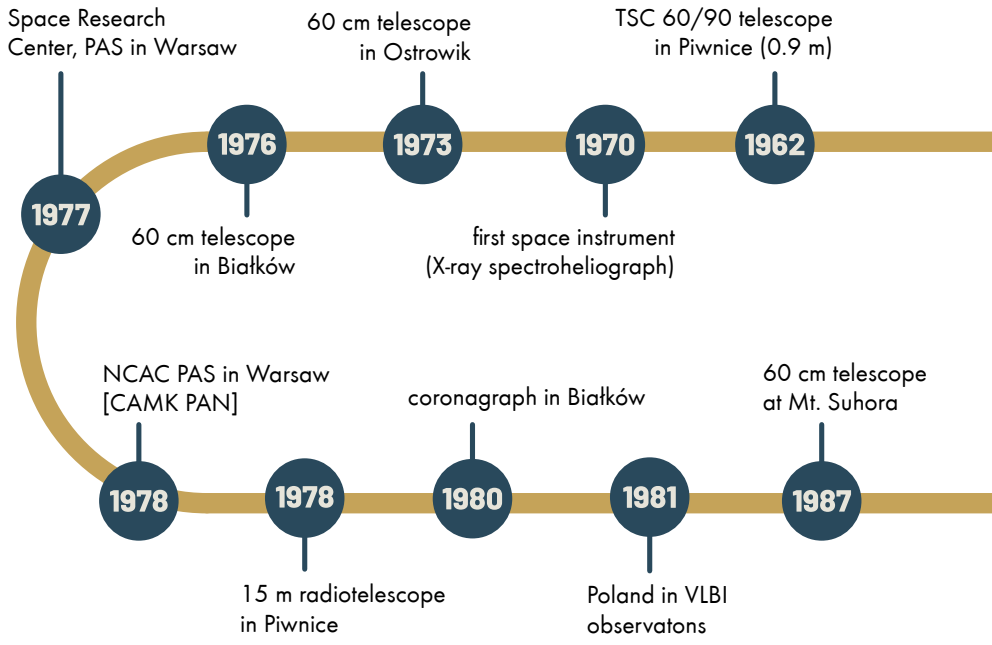
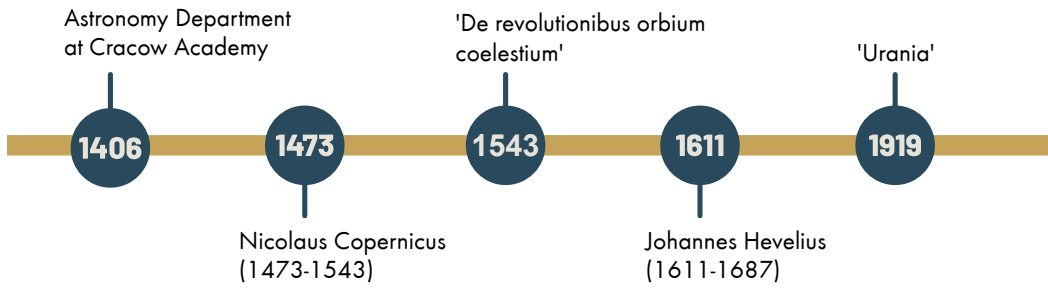
Recent history of Polish astronomical facilities, since regaining independence in 1918, is presented in a television documentary series entitled 'Independent astronomy', available also on YouTube Astronarium channel

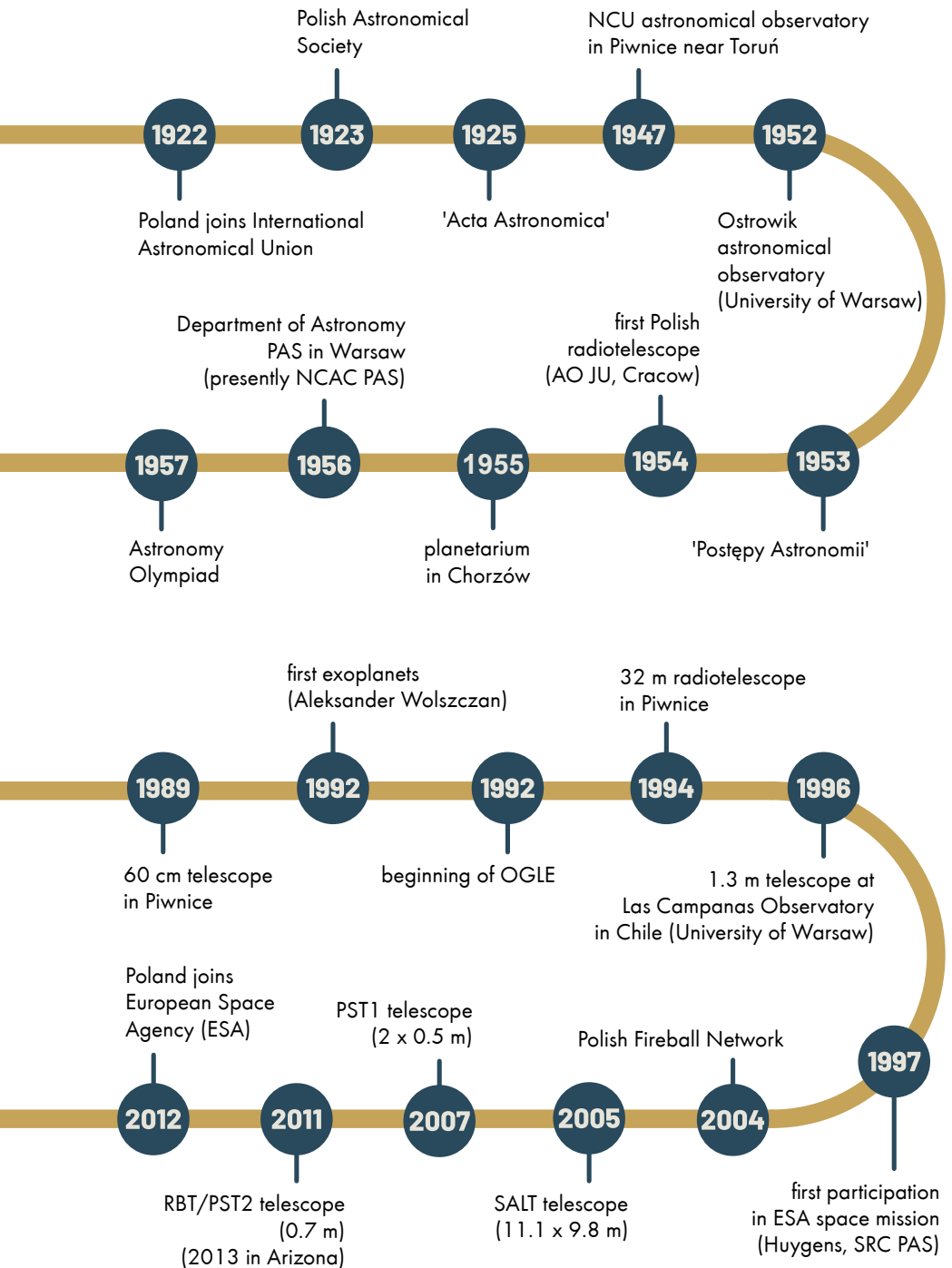


Wydawnictwo Ossolineum published two volumes of 'History of astronomy in Poland' in 1975 and 1983. Books are in Polish.



Polish Astronomical Society published in 2007 and 2008 two books: 'To be an astronomer.. Testimonies of life and work of Polish astronomers' and 'Portraits of Polish 20th century astronomers'. Books are in Polish.





Interesting facts

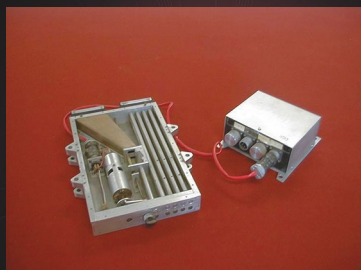
The largest optical telescope in Poland is TSC 60/90 with a 0.9-meter diameter. It is installed at the astronomical observatory in Piwnice near Toruń.



The largest radiotelescope in Poland has a 32-meter diameter. It is located near Toruń.

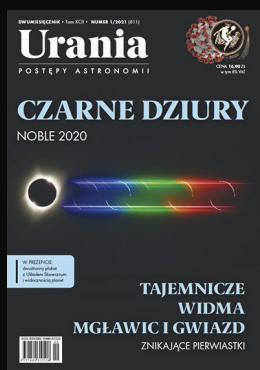
Coronagraph in Białków Observatory is one of the largest instruments of this type in the world with a diameter of 53 centimeters.





The first Polish scientific instrument launched into space was an X-ray spectroheliograph. The instrument was launched in 1970 onboard a Russian rocket. The instrument was designed to measure solar activity.

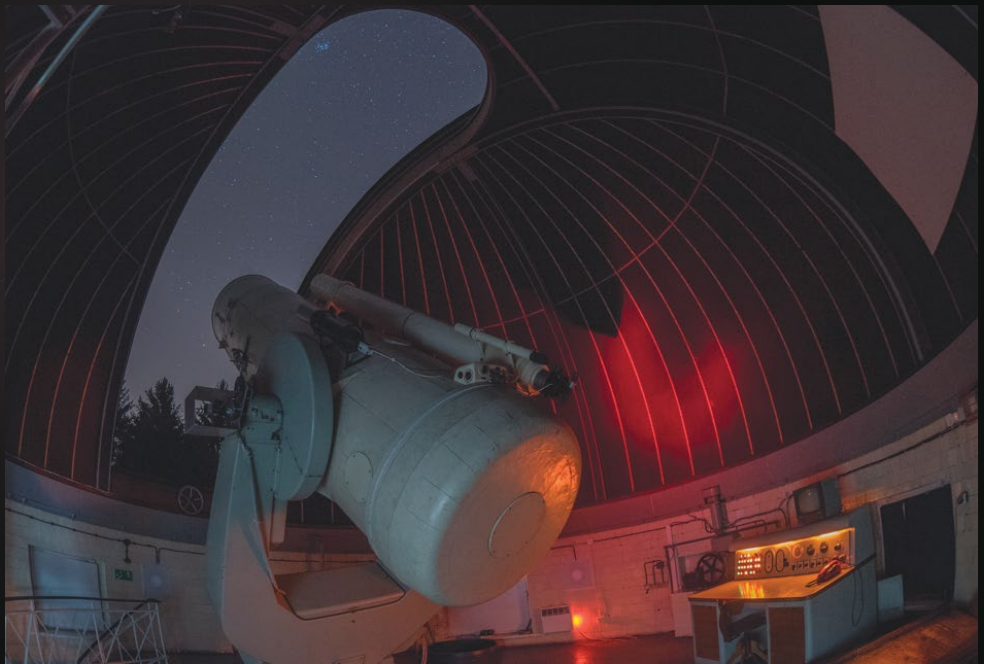
At the Astronomical Observatory of the Jagiellonian University two films from the 1920s and 1930s have been found ('Discovery of Orkisz comet' and 'On stellar trails'). They are probably the oldest Polish popular science films.



'Urania' is one of the oldest popular science magazines in the world devoted to astronomy among magazines that are currently published.

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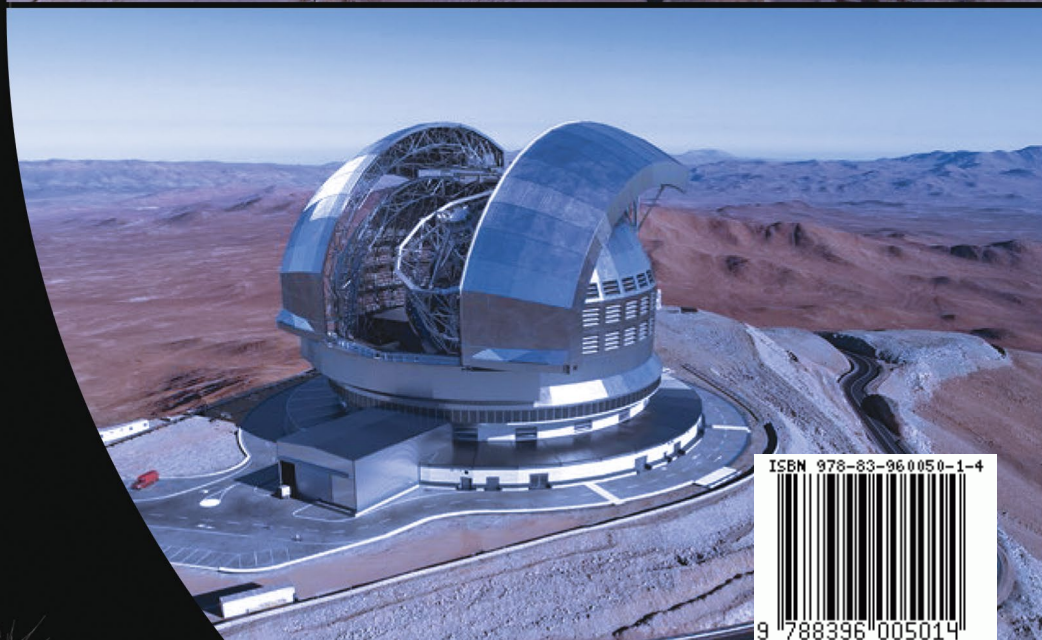


The largest optical telescope in Poland – TSC 60/90 at the NCU [UMK] Astronomical Observatory in Piwnice near Toruń. *Credit: NCU [UMK]*

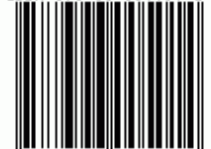


Mt. Suhora Astronomical Observatory. *Photo: Astronarium*

ALMA radiotelescope network at Chajnantor Plateau in Chile.
Credit: ALMA (ESO/NAOJ/NRAO), A. Marinkovic/X-Cam



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Artist's impression of the Extremely Large Telescope (ELT).
Credit: ESO/L. Calcada