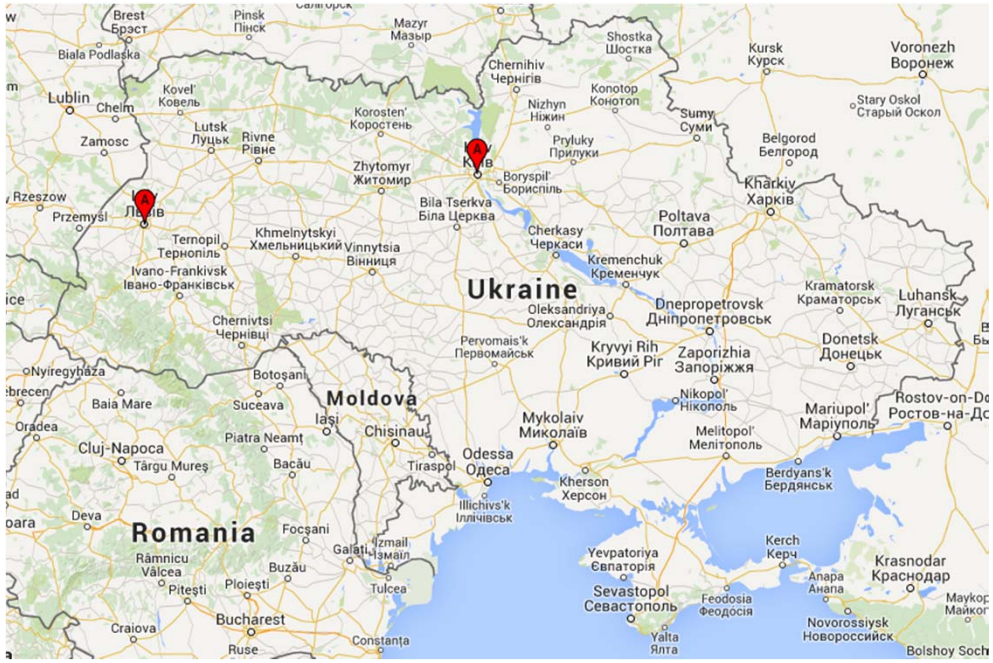
Ukraine



Group leader: Bohdan Hnatyk

Institutes: Astronomical Observatory of the Taras Shevchenko National University of Kyiv (Kyiv), Astronomical Observatory of Ivan Franko National University of Lviv (Lviv), Institute for Applied Problems in Mechanics and Mathematics National Academy of Sciences of Ukraine (Lviv)

Expertise: High energy astrophysics, instrumentation, computing

Immediate group members: 12

Immediate FTE commitment: 3.5

The Astronomical Observatory of the Taras Shevchenko National University of Kyiv
(AO KNU)

AO KNU [1], founded in 1845, is one of the oldest astronomical observatories of Ukraine and belongs to the top-ranked astronomical institutions in Ukraine. In the field of high-energy astrophysics, the group led by B. Hnatyk is member of the GAMMA-400 Collaboration [2], in 2005 they created, together with ISDC, the Ukrainian Virtual Roentgen and Gamma-ray Observatory, VIRGO [3], now VIRGO provides an access to high-energy astrophysics data archives and data reduction software (for INTEGRAL, SWIFT, FERMI, CHANDRA, XMM data analysis) for Ukrainian astronomers and students from Ukrainian universities.

Main research activities of AOKNU related to CTA are: Active Galactic Nuclei in X- and gamma-ray bands (main experts: V. Zhdanov and his coauthors) [4-6];Cosmic rays: sources and propagation effects (main experts: B. Hnatyk and his coauthors) [7-12];“Beyond the Standard Model of Particle Physics” and how it manifests in gamma-ray data (main experts: B.Hnatyk and his coauthors)[13-15].

At present the group consists of 5 members:

Scientists: Dr.Sci**.** Hnatyk Bohdan, Leading Scientific Researcher (modeling of gamma-ray radiation of astrophysical sources); Dr.Sci. Zhdanov Valery, Head of the Department of Astrophysics, Prof. (modeling of gamma-ray radiation of astrophysical sources); PhD Fedorova Elena, Senior Researcher (modeling of gamma-ray radiation of astrophysical sources) (0.7FTE).

Engineer: Sliusar Vitalii (numerical modeling, Monte-Carlo simulations; data analysis) (1.0FTE).

PhD Student: Gnatyk Roman (numerical modeling).

Current aims:

Simulations of the SST camera signal processing. Group: Nicolaus Copernicus Astronomical Center, Warsaw, group leader Rafal Moderski

SST-1M active mirror control system, CCD control, integration of the hardware in ACS as separate ACS components, development of operator's GUI and telescope control facilities. Group: ISDC, University of Geneva, group leader Roland Walter

Immediate FTE commitment: 1.7 FTE

The Astronomical Observatory
of the Taras Shevchenko National University of Kyiv (AO KNU)
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The Astronomical Observatory of Ivan Franko National University of Lviv (AO LNU)

AO LNU [1], founded in 1771, is the oldest Astronomical Observatory of Ukraine. The following researches are performed at the observatory (corresponding to its departments): solar physics, physics of stars and galaxies, relativistic astrophysics and cosmology, observational astronomy and near space physics.
The current research activities in the framework of the CTA project are high energy astrophysics and design and development of telescope prototypes [2-8].

At present the group consists of 4 members:

Scientists: Dr.Sci. Novosyadlyj Bohdan, Head of the Department of Relativistic astrophysics and cosmology, Senior Researcher (theoretical and numerical modeling of the relativistic phenomena in the Universe), PhD Sergijenko Olga, Researcher (numerical modeling in relativistic astrophysics, Monte Carlo simulations);
Engineers: Bilinskyi Andrii (optical telescopes: pointing and tracking software; data analysis) (0.5FTE); Martynyuk-Lototskyy Kostyantyn (optical telescopes: analogue and digital hardware; pre-processing of raw observations) (0.5FTE).

Current aims:

SST-1M telescope pointing calibration. Group: Nicolaus Copernicus Astronomical Center, Warsaw, group leader Rafal Moderski

Immediate FTE commitment: 1.0 FTE

The Astronomical Observatory of Ivan Franko National University of Lviv
(AO LNU)
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Institute for Applied Problems in Mechanics and Mathematics
National Academy of Sciences of Ukraine (IAPMM)

IAPMM [1] is a leading institution in Ukraine in applied mathematics. It has a group of researchers who works in theoretical physics, gravitation and high-energy astrophysics. In the field of high-energy astrophysics, the group is led by O. Petruk. They have long-term cooperation with astrophysical groups in Arcetri Observatory (Florence) and Astronomical Observatory in Palermo.

The research activity of IAPMM in the high-energy astrophysics is closely related to CTA goals: supernova remnants and cosmic rays through their manifestations in gamma-rays and other bands. Namely, the group develops methods to model and analyse *images* (maps of surface brightness) of SNRs due to nonthermal emission of cosmic rays accelerated there [2-9]. At present, this is the only group working in this direction.

At present the group consists of 3 members:

Scientists: Dr.Sci. Petruk Oleh, Senior Researcher, (modeling the spatially resolved gamma-ray maps of extended astrophysical sources due to leptonic and hadronic radiation); PhD Beshley Vasyl, Researcher, (MHD simulations, Fermi data analysis, Monte-Carlo simulations of muonic Cherenkov radiation) (0.8 FTE);

PhD Student: Kuzyo Taras (MHD simulatons).

Current aims:

Muon rings in SST-1M. Group: Nicolaus Copernicus Astronomical Center, Warsaw, group leader Rafal Moderski

Immediate FTE commitment: 0.8 FTE

Institute for Applied Problems in Mechanics and Mathematics
National Academy of Sciences of Ukraine (IAPMM)
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