New Eyes on the Sky

MING-HUEY HUANG
DEPARTMENT OF ENERGY ENGINEERING, NATIONAL UNITED UNIVERSITY, MIAOLI CITY, TAIWAN

The UFFO (Ultra-Fast Flash Observatory) Pathfinder for gamma-ray bursts (GRBs), and the TUS (Transient Ultraviolet Setup) telescope for ultrahigh energy cosmic rays, were launched onboard the Lomonosov satellite at 11:00 a.m., April 28, 2016, by the Soyuz-2.1a rocket, which first launched from the Vostochny Cosmodrome.

The UFFO pathfinder is a new type of space telescope designed to track GRBs, which are the most extreme explosions in the universe since the Big Bang. Over one thousand GRBs were observed following the launch of the satellite SWIFT and many of them were identified with optical afterglows with many ground based telescopes. However, few GRBs were observed within one minute after the onset of a gamma or X-ray burst. The UFFO international collaboration has developed a tracking space telescope, the UFFO Pathfinder, which will detect X-rays and track UV/optical lights emitting from the very early moments of a GRB. The space telescope was installed in the space-facing side of the Lomonosov satellite. On the Earth-facing side of the satellite a TUS telescope was installed, which uses a 7-segment Fresnel type mirror to reflect the elusive fluorescent light from the extensive air shower of ultrahigh energy cosmic rays (UHECRs) interacting with atmosphere. The TUS telescope could pave the way to the realistic detection of UHECRs from space.

The UFFO international collaboration consists of groups from Korea, Russia, Spain, Taiwan, and Denmark. The UFFO team is led by Prof. Il Hung Park (previously of the Research Center of the MEMS Space Telescope (RC-MST), Ewha Womans University; now at Sungkyunkwan University, Korea). The team from Taiwan is led by Pisin Chen at LeCosPA (the Leung Center for Cosmology and Particle Astrophysics), National Taiwan University. The team from Spain is led by Alberto Castro-Tirado at IAA (Instituto de Astrofísica de Andalucía) and Victor Reglero at the University of Valencia. The team from Denmark is led by Carl Budtz-Jørgensen at DTU (the Technical University of Denmark). The Russian team, led by Mikhail Panasyuk at Moscow State University, is also responsible for the TUS telescope, several small payloads, and the Lomonosov satellite.

Ming-Huey Huang is an associate professor of the Department of Energy Engineering at National United University located in Miaoli City, Taiwan. Huang received Ph.D degree from the University of Utah, USA and specialized in the cosmic rays physics. His recent works are instrumental projects for various astroparticle experiments, such as NCT, UFFO, and ARA.