

Imaging Stokes polarimeters for the BOOTES Global Telescope Network

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The Burst Observer and Optical Transient Exploring System (BOOTES) started in 1998 as a Spanish-Czech collaboration devoted to studying optical emissions from gamma-ray bursts (GRBs). The BOOTES global network of robotic telescopes is constantly watching the sky for astronomical transients from its seven locations spread across both hemispheres. With them, Spain celebrated the beginning of a transformative era in ground-based observations with the successful completion of the BOOTES Network. Studies of astrophysical transients, such as gamma-ray bursts (GRBs) and other high-energy phenomena, have long been hindered by their elusive and unpredictable nature. BOOTES can track and monitor suspected neutrino sources and gravitational wave emitters, as well as nearby objects like fireballs, comets, asteroids, or trans-Neptunian objects in the Solar System, variable stars in our Galaxy, supernovae in distant galaxies, or blazars. Moreover, BOOTES may diligently commit to monitoring space debris and surveying the sky to identify potentially dangerous objects that threaten humanity.

Our presentation consists of two parts. In the first, we describe the imaging polarimeter EDIPO (Efficient & Dedicated wide-field Imaging Polarimeter) as a part of astronomical telescopes of the BOOTES. The EDIPO is designed to analyze the polarization parameters of linearly polarized light in the spectral range of 450-1000 nm in a 30'x30' field of view.

In the second part, we present a design approach for a low-cost Imaging Stokes Photometer-Polarimeter based on polarizing films. It will be optimized for two spectral regions: 400-550 nm and 550-1100 nm. Thus, it will be possible to measure the Stokes parameters in two ways: for 0°, 60°, 120° and for 0°, 45°, 90°, and 135° (by means of polarizers + waveplate). This will provide measurements for circular and linear polarizations.

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