Novel Optical Solution and Stray Light Performance for Next Generation UV Space Telescope of 1m in Aperture

Jinsuk Hong and Sug-Whan Kim
SOL, Dept. of Astronomy and Space Science, Yonsei University

The current generation UV space instrument, GALEX, is producing an array of excellent scientific returns. Based on the scientific and technical lessens from the GELAX mission, we present a new conceptual optical design for the next generation UV space instrument of 1m in aperture. The mission concept is mainly concerned with the precision imaging observation, thus excluding the UV spectroscopic channels. We then adopted a cost-effective design philosophy utilizing as many common elements with the existing GALEX instrument as possible. These approaches led to a dramatic reduction in the degree of the instrument complexity and therefore the potential mission cost. The technical details of optical model including stray light performance are presented. We argue that this new UV space telescope will offer the limiting magnitude of 26.5 mag(AB) and the spatial resolution of 2~3 arcsec respectively, these being improved from 25 mag(AB) and 4~6 arcsec of the current GALEX instrument.