

mission of NASA. The flight software can process encoding and decoding data, control the subsystems, and provide observation autonomy. We developed a python-based testing framework to improve software reliability. The flight software development is one of the crucial contributions of KASI and an important milestone for the next project which is developing a solar coronagraph to be installed at International Space Station.

### [7 NGSC-06] BITSE Ground Software

Ji-Hye Baek<sup>1</sup>, Jongyeob Park<sup>1</sup>, Seonghwan Choi<sup>1</sup>, Jihun Kim<sup>1</sup>, Heesu Yang<sup>1</sup>, Yeon-Han Kim<sup>1</sup>, Joseph-Paul A. Swinski<sup>2</sup>, Jeffrey S. Newmark<sup>2</sup>, Nat. Gopalswamy<sup>2</sup>

<sup>1</sup>*Korea Astronomy and Space Science Institute, Korea,* <sup>2</sup>*NASA Goddard Space Flight Center, USA*

We have developed Ground Software (GSW) of BITSE. The ground software includes mission operation software, data visualization software and data processing software. Mission operation software is implemented using COSMOS. COSMOS is a command and control system providing commanding, scripting and data visualization capabilities for embedded systems. Mission operation software send commands to flight software and control coronagraph. It displays every telemetry packets and provides realtime graphing of telemetry data. Data visualization software is used to display and analyze science image data in real time. It is graphical user interface (GUI) and has various functions such as directory listing, image display, and intensity profile. The data visualization software shows also image information which is FITS header, pixel resolution, and histogram. It helps users to confirm alignment and exposure time during the mission. Data processing software creates 4-channel polarization data from raw data.

### [7 NGSC-07] BITSE Preliminary Result and Future Plan

Su-Chan Bong<sup>1</sup>, Heesu Yang<sup>1</sup>, Jae-Ok Lee<sup>1</sup>, Ryun Young Kwon<sup>1</sup>, Kyung-Suk Cho<sup>1,2</sup>, Yeon-Han Kim<sup>1</sup>, Nelson L. Reginald<sup>3</sup>, Seiji Yashiro<sup>3</sup>, Qian Gong<sup>3</sup>, Natchumuthuk Gopalswamy<sup>3</sup>, Jeffrey S. Newmark<sup>3</sup>  
<sup>1</sup>*Korea Astronomy and Space Science Institute, Korea,* <sup>2</sup>*University of Science and Technology, Korea,* <sup>3</sup>*NASA Goddard Space Flight Center, USA*

BITSE is a technology demonstration mission to remotely measure the speed, temperature, and density of the solar wind as it forms as close as 3 Rs. BITSE obtained coronal images during its one

day flight above more than 99% of the atmosphere, and calibration data are taken in the laboratory as well as during the flight. As the linearly polarized K-corona is much fainter than other bright sources like diffraction, sky, and F-corona, a careful data reduction is required to obtain reliable scientific results. We will report status of the obtained data, the reduction progress, and future plan.

## 특별세션

### Pillars of the Standard Model of Cosmology

#### [7 PSMC-01] Deviations from power-law primordial spectrum

Jinn-Ouk Gong  
*Korea Astronomy and Space Science Institute*

We discuss theoretical motivations for deviations from standard power-law primordial power spectrum and possible mechanism to provide non-trivial scale dependence for the primordial power spectrum.

#### [7 PSMC-02] Testing the Curvature of the Universe

Benjamin L'Huillier  
*Yonsei University*

In a homogeneous and isotropic universe, the solution to the Einstein Field equation is the Friedmann-Robertson-Lemaître-Walker metric, which describes an expanding Universe with spatial curvature. The curvature has profound implications, in particular regarding the early universe.

In this talk, I will review the state-of-the-arts constraints on the spatial curvature of the Universe using different cosmological observations. In particular, I will focus on model-independent tests using baryon acoustic oscillations and supernovae.

#### [7 PSMC-03] Candidates of cold dark matter

Ki-Young Choi  
*Sungkyunkwan University*

The astrophysical and cosmological observations are consistent with the cold dark matter in the standard cosmology. I review the possible candidates of cold dark matter and their production in the early Universe with their possible