

R010-11

Zoom meeting B : 11/3 AM2 (10:45-12:30)

12:05~12:25

光赤外線波長における天文観測と宇宙天気

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Astronomical observation in visible-infrared wavelength and space weather

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For astronomical science, we have conducted electromagnetic observations in visible and infrared wavelengths with ground-based and space telescopes. Our main objective is to measure the extragalactic background light (EBL) in these wavelengths. The EBL consists of entire radiation emitted throughout the cosmic history and serves as a crucial quantity to reveal cosmological evolution of stars and galaxies. For example, we recently succeeded in first launch of Cosmic Infrared Background Experiment 2 (CIBER-2), which is an international sounding-rocket project to observe electromagnetic spectrum and spatial fluctuation of the EBL from space. To measure the EBL intensity accurately, it is important to study a foreground emission, zodiacal light, which is caused by scattering of sunlight by interplanetary dust and thermal emission from the dust. Therefore, we have also observed the detailed electromagnetic spectrum of the zodiacal light by using ground-based telescopes.

In observation of visible to infrared electromagnetic waves from space, some physical phenomena related to space weather can be observed as well. For one thing, the hydroxyl radical (OH) in the middle atmosphere is influenced by solar ultraviolet radiation and produces emission lines in near-infrared wavelengths. Such lines can be observed from ground-based telescopes with high spectral resolution. In analysis of the time variation, a strong positive correlation between OH and MgII index has been reported. For another thing, space infrared observation of zodiacal light reportedly found a moving interplanetary dust cloud which is likely associated with the solar coronal mass ejection.

In this presentation, we will introduce our astronomical observations and space weather phenomena which can be observed by visible to infrared electromagnetic waves.