

Scientific Objectives of Far-ultraviolet Imaging Spectrograph on KAISTSAT-4

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Plasma evolution such as mixing and cooling are the key element of physical processes to our understanding of the structure and evolution of galaxies. The main objective of the FIMS mission is to study the structure and evolution of galactic plasma with a temperature of 104.5-106 K. FIMS is sensitive to emission line fluxes an order of magnitude fainter than any previous detection and allows us to determine the abundance and ionization state of hot Galactic plasmas without a priori assumptions of as yet unknown astrophysical conditions. FIMS will also provide remote sensing observation of earth's airglow and aurora for direct comparisons with data from other space physics payloads. Scientific goals of FIMS are 1) to map the spatial distribution of hot Galactic plasmas through a one-year sky survey, 2) to determine physical states of diffuse sources such as superbubbles and supernova remnants with pointed observations, and 3) to test the models presently available for the Galactic evolution. FIMS, together with other payloads for space physics research, will also study 4) height distribution and solar angle dependence of FUV emission from upper atmosphere and its correlation with solar activity, and 5) small scale features (> 10 km) of aurora with spectral information.