

여준다. 이러한 광학계는 광기계 설계를 통한 광학계 지지 구조물을 필수적으로 설계하며, 이 광기계 설계는 광학적 성능을 만족시키면서 광학계가 발사체의 진동, 충격 및 열 진공의 우주환경을 모두 견뎌낼 수 있도록 설계해야만 한다. 이 발표에서는 최근 한국에서 수행한 천문우주 미션 경험을 바탕으로 실제 적용된 광학계 마운팅 기법을 사례 별로 정리하고 그 연구결과를 소개하고자 한다.

[구 AI-03] Optical Performance Measurement of the MATS Satellite

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The MATS (Mesosphere Airglow/Aerosol Tomography Spectroscopy) satellite is the next Swedish science microsatellite. We report optical performance test results of the limb telescope, which is the major payload. This telescope is designed with "linear astigmatism-free" (LAF) off-axis optical system in order to have high optical performance across the wide field of view. We measured Modulation Transfer Function (MTF) and Encircled Energy Diameter (EED) of the limb telescope. Full field imaging tests show expected results without linear astigmatism across the full field of view ($5.67^\circ \times 0.91^\circ$). Since the amount of stray light is from the earth and the sun, we also simulated and measured the stray light in the field image.

[구 AI-04] Flux calibration method for narrow band imaging observation

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Flux calibration for narrow band photometric data gives us an opportunity to get a line flux of extended targets. We developed flux calibration processes for narrow band photometry using broad band filters as a continuum indicator. We derived parameters for color correction and zero point correction including color terms. Applying our method, we successfully subtracted continuum emissions and calibrated the emission lines from an FU Ori type object, V960 Mon.

[구 AI-05] Development of Detector

Performance Test system and Characterization of CCD Camera

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가시광 CCD나 HxRG 등의 적외선 어레이 디텍터는 천문관측기기를 구성하는 핵심부품으로, 관측기기의 종합 성능 결정에 중요한 영향을 미친다. 따라서 디텍터의 성능을 정확하게 진단하는 것은 관측기기의 성능을 예측하거나 유지 또는 개선하는데 중요한 요소가 된다. 한국천문연구원에서는 최근에 디텍터 성능을 직접적으로 측정할 수 있는 광전자 시스템을 구축하고 장치를 구동하기 위한 소프트웨어를 자체 개발하였다. 본 시스템을 기반으로 Andor iKon-M 카메라 CCD의 시스템 계인, 최대 포화전자수, 감도, 비선형성, 양자효율, 암전류, 읽기 잡음, 불량 픽셀의 특성을 측정하였으며 특히, 양자효율의 경우 디텍터의 구동 온도에 따라 파장별로 2%에서 30% 이상까지 편차가 발생하는 것을 확인하였다. 본 연구는 디텍터의 성능 평가와 그 중요성에 대하여 논의한다.

[구 AI-06] Measurement result of ultra wideband corrugated horn for combined ALMA band 7 and band 8 frequencies

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We present measurement results of the fabricated ultra wideband corrugated horn for the planned ASTE band7+8 receiver. Return loss and vector beam pattern measurements were carried out over 275-500 GHz frequency range. Hardware set-ups for these measurements are described as well as beam measurement data are compared with such design criteria as beam width, phase curvature and cross-polarization. We discuss the impact of these beam measurement results to the aperture efficiency of the proposed 2-mirror receiver optics for the ASTE telescope.

고천문&홍보

[구 HP-01] Historical solar eclipses and practical observation area in Goguryeo

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Korean chronicles have a large amount of observational records over two thousand years. Many historical astronomical records are useful in