[포IM-27] Brightness and Fluctuation of Mid-Infrared Sky from AKARI Observations

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We present the smoothness of mid-infrared sky brightness from the Japanese infrared astronomical satellite, AKARI observations. AKARI monitored the north ecliptic pole (NEP) during its cold phase with nine wavebands from 2.4 to 24 μm, out of which six mid-infrared bands are used in this study. Simple sinusoidal fit to the seasonal variation of the sky brightness shows that the mid-infrared brightness towards the NEP is not affected by small-scale features of the interplanetary dust cloud. We applied the power spectrum analysis to the images to search for the fluctuation of sky brightness.

The fluctuation powers at 200 arcsecond are estimated to be at most 1.58 ± 0.33 nW $m^{-2}sr^{-1}$or0.13% of the total brightness at 7μm and a tleast 0.64 ± 0.11 nW $m^{-2}sr^{-1}$or 0.02% at 18μm. The residual fluctuations at a few arcminute scales at short mid-infrared wavelengths (7, 9, and 11 μm) are consistent with those expected from the diffuse galactic light. At long mid-infrared wavelengths (15, 18, and 24 μm) the measured fluctuations are comparable to or smaller than the one caused by photon noise and their sources are not identified. We conclude that the upper limit of the fluctuation in the zodiacal light is about 0.02% of the sky brightness.

[포IM-28] Molecular gas properties under ICM pressure : A Case study of NGC4402

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We probe 12CO J=2-1 and 13CO J=1-0 properties of a Virgo disk galaxy, NGC 4402 which is located near the cluster center. Our goal is to study the impact of intra cluster medium (ICM) on the molecular gas of a galaxy in the cluster environment. It has been believed that cluster galaxies are deficient in atomic hydrogen gas (HI gas) compared to their field counterparts and now there is much evidence that low density ISM can be easily removed by ram pressure caused by ICM wind. Meanwhile, no significant molecular gas deficiency of the cluster galaxy population has been found yet they show overall lower star formation rate than galaxies in the field, and it is still controversy whether dense ISM can be also stripped by the ICM wind or not. NGC 4402 with truncated HI disk(D_{HI}/D_{opt} ~ 0.75 and only 36%of HI gas compare to field galaxies of a similar size) and a disturbed gas morphology, appears to have strong ongoing ram pressure. Using high resolution 12 and 13CO data of NGC 4402 from a Sub Millimeter Array (SMA), we probe the molecular gas properties under strong ICM pressure. We discuss how its star formation activity and hence the global color of NGC4402 would be changed in the future