[구SS-01] Smoothness of the Zodiacal Light and Emission from the AKARI North Ecliptic Pole Monito rObservations

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The Japanese infrared (IR) space mission AKARI monitored the brightness in the fields very close to the north ecliptic pole (NEP) with nine wavebands in Infrared Camera (IRC), which cover the wavelength range from 2 to 24 μm. We reduced the NEP monitor observations and examined the smoothness of the sky background brightness. Our analysis shows that the background brightness is smooth over a frame of about 10′×10′ within about 0.1% deviation in mid-IR. Because the zodiacal light (ZL) and emission (ZE) dominate the diffuse sky brightness in the near- and mid-IR wavelengths, the background brightness varies with season through a year. We tried sinusoidal fittings to the observed NEP background brightness. The fitting analysis shows that the sine function is successful in describing the seasonal variation of the ZL and ZE within 2% deviations from the observed brightness, especially for the 15, 18, and 24 μm bands, within 0.3%. These results will provide limits and caveats for the studies of the cosmic infrared background radiation.

[구SS-02] Search for the Comet Activity of 107P/(4015)Wilson-Harrington during 2009/2010 Apparition

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107P/(4015) Wilson-Harrington is one of possible candidates of the dormant or inactive comet nuclei. It was discovered on a photographic plate exposed with the 48-inch Schmidt at Palomar Observatory on 1949 November 19 UT, displaying the faint extended cometary tail. No comet activity has not been after 1949 apparition. Here we present the optical observations of 107P/(4015) Wilson - Harrington during 2009/2010 apparition taken in search of low-level comet activity.

Our photometric and spectroscopic data were collected 28 - 86 days after the perihelion passage on 2009 October 22 in a wide range of solar phase angle of 39-68 degree.

A disk-integrated phase function was constructed, giving a geometric albedo of 0.055+/-0.012, phase integral of q=0.34, and Bond albedo of A_B=0.019. The photometric property shows profile similar to low albedo asteroids and comet nuclei. Any emission lines were found in our spectrum, giving a flat reflectance similar to low albedo asteroids. Although we could not find any evidence for the comet activity in our photometric and spectroscopic data, we found an upper limit of the fractional active area of 0.001%. We derived the upper limit of the optical depth of the dust trail and tail 7x10^{-10}. We conclude that 107P/(4015)Wilson-Harrington became completely dormant or inactive in 2009/2010 return.