

An Investigation of the Mid-Infrared Extinction in the Galactic Plane Using AKARI data

Mengyao Xue¹, Jian Gao¹, B. W. Jiang¹

¹Beijing Normal University, China

The electromagnetic radiation from stars is dimmed and reddened by the absorption and scattering of interstellar dust which is known as the interstellar extinction. Measuring the variation of the interstellar extinction with wavelength, known as the interstellar extinction law, is crucial for properly restoring the color indices and the spectral energy distributions of celestial objects. It is also an important method to investigate the nature of the interstellar dust. Based on the data from the AKARI and Spitzer/GLIMPSE surveys, the mid-infrared extinction towards different sightlines in the Galactic Plane (GP) are derived, with RGB stars chosen as the extinction tracers. Using the color-excess method, the interstellar extinction at $9\mu\text{m}$ is derived for five different directions in the GP: $-10^\circ < l < 10^\circ$, $11^\circ < l < 30^\circ$, $31^\circ < l < 65^\circ$, $-30^\circ < l < -11^\circ$, and $-65^\circ < l < -30^\circ$. The average extinction at $18\mu\text{m}$ for all the GLIMPSE fields is also derived. The mean values of $A_{[9]}/A_{K_s}$ and $A_{[18]}/A_{K_s}$ are 0.466 ± 0.165 and 0.350 ± 0.125 , respectively.