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暗黒星雲 L1251 のガスとダストの多波長観測

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TAKAGI, C., DOBASHI, K., AKISATO, K., INOUNE, M. and OOE, Y.: Multiwavelength observation of gas and dust in the dark cloud of L1251. *Bull. Tokyo Gakugei Univ. Natur. Sci.*, **60**: 7–68. (2008) ISSN 1880-4330

Abstract

L1251 is a dark cloud in the Cepheus region having a cometary shape with a dense “head” at the galactic longitudes $\ell \geq 114^\circ$ showing active star-formation and with a diffuse “tail” at $\ell < 114^\circ$ without any signs of star formation. In this paper, the overall distributions of dust and gas in the cloud were investigated based on the photometric data taken at 7 bands in the optical to the near-infrared wavelengths (B , V , R_c , I_c , J , H , and K_s) and on the spectral data of the $^{13}\text{CO}(J=1-0)$ and $\text{C}^{18}\text{O}(J=1-0)$ emission lines. Using the photometric data, we derived the extinction maps of A_B , A_V , A_{R_c} , A_{I_c} , A_J , A_H , and A_{K_s} as well as the color excess maps of $E(B-V)$, $E(V-R_c)$, $E(R_c-I_c)$, $E(V-I_c)$, $E(J-H)$, and $E(H-K_s)$ to reveal the global dust distribution in L1251 at various density ranges. We found that the reddening curve representing the dependence of extinction on wavelength is similar to that suggested by Cardelli et al. (1989) for $R_v=6.0$ except for two data points for R_c and I_c . We also investigated the gas distribution of the cloud through the ^{13}CO and C^{18}O data, and derived the total molecular mass of the cloud to be $\sim 1000 M_\odot$.

Key words: radio astronomy, dark cloud, L1251, reddening curve

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