[구IM-03] Simulation study of dust-scattered Far-Ultraviolet emission in the Orion-Eridanus Superbubble

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We present the results of dust scattering simulations carried out for the Orion-Eridanus Superbubble region by comparing them with observations made in the far-ultraviolet. The albedo and the phase function asymmetry factor (g-factor) of interstellar grains were estimated, as were the distance and thickness of the dust layers. The results are as follows: ⟦0.43⟧ _(-0.04)^(+0.02) for the albedo and ⟦0.45⟧ _(-0.2)^(+0.2) for the g-factor, in good agreement with previous determinations and theoretical predictions. The distance of the assumed single dust layer, modeled for the Orion Molecular Cloud Complex, was estimated to be ~110 pc, and the thickness ranged from ~130 at the core to ~50 pc at the boundary for the region of present interest, implying that the dust cloud is located in front of the superbubble. The simulation result also indicates that a thin (~10 pc) dust shell surrounds the inner X-ray cavities of hot gas at a distance of ~70-90 pc.

[구IM-04] Far-ultraviolet Observations of the Taurus-Perseus-Auriga Complex

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We firstly present the unified Far-UV continuum map of the Taurus-Auriga-Perseus (TPA) complex, one of the largest local associations of dark cloud located in (l, b)=([154,180], [-28, -2]), by merging both FIMS and GALEX. The FUV continuum map shows that dust extinction correlate well with the FUV around the complex. It shows strong absorption in FUV toward the dense Taurus cloud while it does not in California cloud. It turned out that it is related to the relative location of each cloud and Perseus OB2 association. We also present some results of dust scattering simulation based on Monte Carlo Radiative Transfer technique (MCRT). Through this dust scattering simulation, we have derived the scattering parameter for this region, albedo(a)=$0.42^{+0.05}_{-0.05}$, , asymmetry factor(g)=$0.47^{+0.11}_{-0.27}$. The optical parameters we obtained seem reasonable compared to the theoretical model values ~0.40 and ~0.65 for the albedo and the phase function though the phase function is rather small. Using the result of simulation, we figured out the geometries of each cloud in the complex region, especially their distances and thicknesses. Our predictions from the results are in good agreement with the previous studies related to the TPA complex. For example, the Taurus cloud is within ~ 200pc from the Sun and the Perseus seems to be multi-layered, at least two. The California cloud is more distant than the other cloud on average at ~350 pc and Auriga cloud seems to be between the Taurus cloud and the eastern end of the California cloud. We figured out that across the TPA complex region, there might be some correlation between the LSR velocity and the distance to each cloud in the complex.