precollapse evolution of two-component clusters, $t_{r2} \propto (N_1/N_2)^{3/2}(m_1/m_2)^{8/3}t_{rh}$. This new time scale has been obtained by comparing the velocity dispersion change per unit time averaged over the entire cluster to the central velocity dispersion. Both core and global equipartition have been included in its derivation.

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TWO DIMENSIONAL DECOMPOSITION METHOD OF THE LUMINOSITY DISTRIBUTION FOR THE SPIRAL GALAXIES

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We have developed two-dimensional decomposition method which is suitable to understand the luminosity distribution of spiral galaxies. We try to apply our decomposition method to some spiral galaxies. The comparison of our two-dimensional analysis with one dimensional decomposition will be discussed.

CO OBSERVATIONS OF A REGION IN CANIS MAJOR AND MONOCEROUS CONSTELLATIONS

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A large scale $^{13}CO(J=1-0)$ survey was made for a region in Canis Major and Monocerous constellations, which cover in $208^\circ \leq l \leq 230^\circ$ and $-20^\circ \leq b \leq 10^\circ$ with a 8′ spacing by using the 4 m radio telescope of Nagoya University. In total 31500 points were observed, covering a 560 deg^2 area. Several molecular complexes(CMa OB1, CMa OB1-West, Mon R2 and a part of Orion B in the Local arm, and Maddalena cloud and S 287 in the Perseus arm) are included in the observing region. The open clusters and the massive clouds in the Local are well aligned to the Galactic belt, which is declined about -50° from Galactic plane. The age distribution of the open clusters in the arm seems to show the propagation of the star formation from the north-east to south-west of the studing region. While no such tendance is shown in the Perseus arm. YSO candidates are presented in the studing region from IRAS point sources catalog on the basic of Beichman's crit The star formation

activities in CMa OB1 and Mon R2 complexes are discussed by comparing the distributions of H II regions, reflection nebula, outflow sources, maser emissions and IRAS YSO candidated.

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INTERACTION OF SUPERNOVA REMNANTS WITH STELLAR-WIND BUBBLES

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We have carried out 1-dimensional numerical simulations of the interaction of supernova remnants with stellar wind bubbles. We have used an Eulerian, FCT code with an improved accuracy for the simulations of ideal, adiabatic hydrodynamics flows. We assume that the density profile of the supernova ejecta follows the Cheavlier model(1982) and the SN ejecta contains a kinetic energy of 10^{51} ergs. The structure of wind bubble has been calculated with the stellar mass loss rate $M=5\times10^{-6}M_{\odot}/yr$ and the wind velocity $\upsilon=2\times10^{3}km/s$. In the first two models we computed the evolution of SNRs with n=7 and n=14 in the uniform medium. The numerical results agree with the Chevalier's similarity solution at early time. The radius of the shock varies as $R_s \propto t_\eta$ where η =0.61 for n=7. When all of the power-law portion of the ejecta is swept up by the reverse shock, the evolution slowly converges to the Sedov-Taylor stage(η =0.4).
There is not much difference between the two cases with different n's. In the five models, the SN ejecta explodes in the center of wind bubbles. In model III, the ejecta generate a variety of reflected and transmitted shocks, complex velocity field by the interaction of stellar shocks and the with the contact discontinuities. In the model III, the time scale for the SN shock to cross the wind shell τ_{cross} is similar to the time scale for the reverse shock to sweep the power-law density profile τ_{bend}. Hence the SN shock crosses the wind shell. At late times SN shock produces another shell in the ambient medium so that we have a SNR with double shell structure. In the numerical results of the remaining four models, we have found that when $\tau_{cross}/\tau_{bend} \leq 2$, or equivalently when $\alpha \leq 50$, the SNRs produced inside wind bubbles have double shell structure. Otherwise, either the SN shock does not cross the wind shell or, even if it crosses, the reverse shock reflected at the accelerates the wind shell to merge into the SN shock. Our results confirm the conclusion of Tenorio-Tagle et al(1990).