[구IM-07] A $^{13}CO(1-0)$ Survey of the Second Quadrant of Galactic Plane I

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We have observed the part of the second quadrant of the Galactic Plane in $^{13}CO(1-0)$ using the multibeam receiver system installed on the 14 m telescope at Taeduk Radio Astronomy Observatory. The target region (L=108 to 112.5) is the part of the ^{12}CO Outer Galactic Plane Survey (Heyer et al. 1998), and it is for the exact Galactic plane with the latitude range of +1 and -1 degree. Total of 48,000 spectra (about 9 square degees) were obtained on 50" grid. The selected velocity resolution is 0.63 km/sec and sensitivity per channel is 0.17 K, and the covered velocity is 320 km/sec. We developed a new reduction method, which effectively deals with a relatively noisy 3-dimensional database. The collected ^{13}CO database will be manipulated with pre-existing ^{12}CO data to get several physical parameters. As it is located in the second quadrant, the kinematic distances of the individual clouds, which will be identified, can be estimated relatively easily without any distance ambiguity. In this meeting we present the reduction method, statistics, and some channel maps, integrated intensity maps, and spatial-velocity maps. We intend to clarify any difference of their characteristics between the clouds in the Outer Galaxy and Inner Galaxy using our data base.

[구IM-08] Effects of multiple driving scales on incompressible turbulence

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Turbulence is ubiquitous in astrophysical fluids such as the interstellar medium and intracluster medium. To maintain turbulent motion, energy must be injected into the fluids. In turbulence studies, it is customary to assume that the fluid is driven on a scale, but there can be many different driving mechanisms that act on different scales in astrophysical fluids. We expect different statistical properties of turbulence between turbulence with single driving scale and turbulence with double driving scales. In this work, we perform 3-dimensional incompressible MHD turbulence simulations with energy injection in two ranges, $2<k<\sqrt{12}$ (large scale) and $15<k<26$ (small scale). We separated into two parts, which are fixed large scale driving and fixed small scale driving. In case of fix large scale driving, two peaks appear in kinetic energy spectrum when the energy injection rate on small scale are comparable to that on large scale. On the other hands, in case of fixed small scale driving we can find two peaks even the energy injection rate on large scale is much smaller that that on small scale. On time evolution of magnetic energy densities in fixed small scale driving case, there seems to be a threshold of energy injection rate.