[IM16] ^{12}CO and ^{13}CO Observations toward the Two Extraordinary Filaments in the Orion-Monoceros Molecular Cloud Complex

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We have observed the Northern and Southern filaments in the Orion-Monoceros molecular cloud complex (OMC) in the J=1-0 lines of ^{12}CO and ^{13}CO using SRAO 6-m and FCRAO 14-m telescope. We have mapped three regions of the Northern filament with a spatial resolution of 2 arcmin and one region of the Southern filament with a spatial resolution of 20 arcsec. The two filaments are very narrow ($\sim 0.5^{o}$) and significantly extended ($\sim 10^{o}$) on the sky. The shape and motion of these extraordinary filaments suggest the influence of a magnetic field that is highly ordered on a large scale, and the filaments appear to connect molecular clouds lying far below the galactic plane to the plane itself. We seek the evidence for flow along the filament, as well as for acceleration and rotation. The primary question we seek to answer is whether the filament is a channel along which molecular gas moves toward the Galactic plane from the OMC region.

[IM17] MHD TURBULENCE AND FARADAY ROTATION

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Using 3 dimensional data cubes obtained from direct numerical MHD turbulence simulations, 2 dimensional data using 21cm wavelength and HI column density data, we calculate structure functions (SF) of the rotation measure (RM), the dispersion measure (DM) and the emission measure (EM). We use different MHD models and data. Each one has different Mach number and the strength of the mean magnetic field. It is not known well about physical parameters of astronomical turbulence. We use the structure functions to gain quantitative knowledge about the physical parameters of the turbulence, such as the strengths of the mean magnetic field or the Mach number. We compare the scaling of the structure functions with the She-Leveque model and other models. Using this result, we compare with the simulated models and the observed data.