[구IM-03] Correlation between Density and Magnetic Field in Compressible MHD Turbulence

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Most astrophysical systems are turbulent and magnetized. Magnetic field plays an important role in the dynamics of ISM and influence all of properties of astrophysical system. Information of magnetic field is very important to understand properties of astrophysical systems. For example, one way to obtain information of magnetic field is to use Rotation Measure. Mean strength of the magnetic field along the line of sight can be estimated from RM/DM. (where RM is rotation measure, DM is dispersion measure) For the estimation of magnetic field strength using RM/DM, the correlation between density and magnetic field is very important. When there is no correlation between density and magnetic field the relation gives exact mean magnetic field strength. But, if the correlation is positive, it overestimates the magnetic field strength, while if the correlation is negative, it underestimate the strength.

We calculate correlation between density and magnetic field in compressible MHD turbulence.

[구IM-04] Automatic Searching Algorithm for Galactic HI at Forbidden Velocities in the Inner-Galaxy ALFA Low-Latitude HI (I-GALFA) Survey

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The faint wing-like features at velocities beyond the velocity boundaries of the Galactic rotation (Forbidden-Velocity Wings, FVWs) in the large-scale position-velocity diagrams of the HI surveys are thought to be associated with dynamical Galactic events. The primary candidates of these FVWs are rapidly expanding HI shells of the old Galactic supernova remnants (SNRs), which are too faint to be visible in other frequencies. The unprecedented sensitivity and resolution of the I-GALFA survey enable detection of "all" HI shells of Galactic SNRs at forbidden velocities predicted by Koo and Kang (2004). Therefore, comparing the distribution of the FVWs visible in the I-GALFA survey and that of the model will improve our understanding on the interstellar medium and the evolution of SNRs. We have been developing an automatic searching algorithm for FVWs in the I-GALFA survey to minimize the selection effects of visual inspection used in the previous FVW study. We present the searching mechanism for FVWs and the statistical properties of the automatically searched FVWs. Also, we discuss the similarities and the differences between the distribution of the identified FVWs and that of the SNRs predicted by Koo and Kang (2004).