Relations of velocity and magnetic field fluctuations in the minimum variance frames

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The analysis of magnetic field and velocity fluctuations in corresponding minimum variance frames revealed that: (1) Minimum variance and mean magnetic field directions would be similar but these two directions are often perpendicular, especially in the high-beta environment, and a number of perpendicular cases decreases with the scale length; (2) Compressibility computed in the minimum variance frame generally increases with frequency but the increase is not monotonic; it exhibits two breaks observed for the magnetic field as well as for velocity fluctuations with approximately the same break frequencies. (3) We suggest that the first break can be connected with a change of pure Alfvén to kinetic Alfvén modes and the second break approximately coincides with the transition from the inertial to kinetic scales.