

Strong magnetic turbulence and magnetic coherent structures as particle accelerators in the ISM

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Magnetic turbulence is classified as weak or strong based on the relative amplitude of the magnetic field fluctuations compared to the mean field. These two classes have different energy transport properties and implications for cosmic ray propagation. I will show that strong magnetic turbulence arises naturally in MHD numerical simulations of galaxies and also delve into the definition of mean and turbulent magnetic field in this context and the consequences for turbulence classification. I will also provide statistics on the associated magnetic coherent structures (MCoSs), such as current sheets, that arise in this context. Finally, I will show the first high-resolution results from magnetic coherent structure formation in molecular clouds.