



Cross-Scale: A Cosmic Vision mission to study multi-scale coupling in plasmas

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Cross-Scale will be the first exploration and quantification of simultaneous multi-scale coupling in universal collisionless plasma processes (shocks, magnetic reconnection, turbulence) across three critical scales: electron, ion, fluid. It will answer fundamental questions in collisionless plasmas, notably "How do shocks accelerate and heat particles?", "How does reconnection convert magnetic energy?" and "How does turbulence control transport in plasmas?" These universal processes will be unravelled by a fleet of 12 specialised spacecraft in near-Earth built by ESA and partner agencies (e.g., JAXA, NASA). This invited talk will focus on the science questions and how this Cosmic Vision mission will answer them.