

RMHD simulations of non-resonant Streaming instability near relativistic shocks

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In this talk, I will present some recent simulations using the relativistic MHD framework to study the influence of electrical cosmic-ray charge upon MHD waves propagating in the precursor of a shock. After describing the structure of the upstream medium of a shock, I will show that in the most likely configuration, magneto-sonic waves are destabilized by the external charge while Alfvén waves remain unaffected. RMHD simulations will be presented describing the magneto-acoustic wave amplification. Simulations will cover the whole shock velocity range from the non-relativistic to the ultra-relativistic shock regime.