

Title: The ideal 2D MHD equations

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Abstract:

This talk presents recent work on the two-dimensional (2D) magnetohydrodynamic (MHD) equations with neither dissipation nor magnetic diffusion. Due to the nonlinear coupling between the evolution equations of the velocity and the magnetic field in the MHD system and the lack of dissipation, the question of global regularity for this system remains open. We will discuss recent work transforming the 2D system to a 1D system and our efforts to construct a particular instance of finite time blow-up in the 1D system.