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The Role of Viscosity in Galaxy Clusters

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The evolution of galaxy clusters is highly influenced by the dynamics of the Intracluster Medium (ICM), which governs crucial aspects. This includes mixing, turbulence processes, and galaxy interactions within the cluster environment. Among the factors influencing the ICM dynamics, the impact of viscosity is still under debate. Understanding the effect of viscosity on the evolution of galaxy clusters is fundamental for comprehending gas properties and the underlying dynamics within the ICM.

By conducting a thorough study, we aim to highlight the implications that viscosity introduces compared to inviscid simulations. These implications encompass morphological differences, larger density fluctuations, and the intricate interplay with dynamo amplification, among other fundamental effects. Our results challenge prior assumptions, especially concerning the constraints on viscosity within the ICM. This study is expected to enhance our understanding of ICM dynamics and contribute to our knowledge of galaxy cluster evolution.

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