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	authors	• Ankit Kumar Panda • Victor Roy	**authors**	• Panda, Ankit Kumar • Roy, Victor	DUPLICATES	964
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	abstract	Here we study the wave propagation and stability of general relativistic non-resistive dissipative second-order magnetohydrodynamic equations in curved space-time. We solve the Boltzmann equation for a system of particles and antiparticles using the relaxation time approximation and the Chapman-Enskog-like gradient expansion for the off-equilibrium distribution function, truncating beyond second-order in curved space-time in electromagnetic fields. Unlike holographic calculation~\cite{Baier:2007ix}, we show that the viscous evolution equations do not explicitly depend on the curvature of space-time. Also, we have tested the causality and stability of the second-order theory in curved space-time in the presence of linearised metric perturbation and derived dispersion relations for various modes. Interestingly, we found the coupling of gravitational modes with the usual magneto-sonic modes in the small wave-number limit. Also, we show additional non-hydrodynamical modes arise due to gravity for a bulk-viscous fluid.	**abstract**	Here we study the wave propagation and stability of general relativistic non-resistive dissipative second-order magnetohydrodynamic equations in curved space-time. We solve the Boltzmann equation for a system of particles and antiparticles using the relaxation time approximation and the Chapman-Enskog-like gradient expansion for the off-equilibrium distribution function, truncating beyond second-order in curved space-time in electromagnetic fields. Unlike holographic calculation~\cite{Baier:2007ix}, we show that the viscous evolution equations do not explicitly depend on the curvature of space-time. Also, we have tested the causality and stability of the second-order theory in curved space-time in the presence of linearised metric perturbation and derived dispersion relations for various modes. Interestingly, we found the coupling of gravitational modes with the usual magneto-sonic modes in the small wave-number limit. Also, we show additional non-hydrodynamical modes arise due to gravity for a bulk-viscous fluid.Comment: 17 pages, 2 figure		
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