Contribution ID : **115** Type : **not specified**

A Holographic Study of Multi-Magnetic Field Magnetohydrodynamics

Wednesday, 4 December 2024 17:00 (20)

We studied magnetohydrodynamics through the perspective of holography, where the gravity side is represented by a 5-dimensional model of three magnetic fields, with each field occupying distinct spatial coordinates and orthogonal to one another. The CFT side describes non-conformal fluids but becomes conformal when considering only the first-order part. We constructed the constitutive relations for magnetohydrodynamics and found that some transport coefficients become matrices in the multi-charge scenario. All the first-order transport coefficients can be derived using Kubo formulae.

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Session Classification : Day5 Main venue