

Abstract Submitted
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Kinetic approach to Kaluza's magnetohydrodynamics A. SANDOVAL-VILLALBAZO, Department of Physics and Mathematics, Univeridad Iberoamericana, Ciudad de México, L.S. GARCIA-COLIN, Department of Physics, UAM-I — Ten years ago we presented a formalism by means of which the basic tenets of relativistic magnetohydrodynamics were derived using Kaluza's ideas about unifying fields in terms of the corresponding space time curvature for a given metric.¹ In this work we present an attempt to obtain the thermodynamic properties of a charged fluid using Boltzmann's equation for a dilute system adapted to kaluza's formalism. The main results that we obtain are analytical expressions for the main currents and corresponding forces, within the formalism of linear irreversible thermodynamics. We also indicate how transport coefficients can be calculated. Other relevant results are also mentioned.

¹A. Sandoval-Villalbaz and L.S. Garcia-Colin; Phys. of Plasmas 7, 4823 (2000).

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