

Abstract Submitted
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On **The**
Generalized-Geometry/Extraordinary-Magnetoresistance Duality SHAN-
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LABORATION — We outline the duality between the extraordinary magnetoresis-
tance (EMR), observed in semiconductor-metal hybrids, and non-symmetric gravity
coupled to a diffusive $U(1)$ gauge field. The corresponding gravity theory may
be interpreted as the generalized complex geometry of the semi-direct product of
the symmetric metric and the antisymmetric Kalb-Ramond field: $(g_{\mu\nu} + \beta_{\mu\nu})$. We
construct the four dimensional covariant field theory and compute the resulting
equations of motion. The equations encode the most general form of EMR within a
well defined variational principle, for specific lower dimensional embedded geometric
scenarios. Our formalism also reveals the emergence of additional diffusive pseudo
currents for a completely dynamic field theory of EMR.

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