

Universal electromagnetic fields

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ABSTRACT

Already in the 30s, Schroedinger observed that all null Maxwell fields solve the equations for the electromagnetic field in any non-linear electrodynamics. More generally, we study properties of “universal” p-forms, i.e., electromagnetic fields that solve simultaneously any generalized electrodynamics (for which the field equations contain arbitrary powers and derivatives of the field strength). Some results including the coupling to Einstein’s gravity are also discussed, and analogies with “universal spacetimes” (which solve simultaneously virtually any theory of gravity) mentioned.