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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 8220;universal8221; 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 8220;universal spacetimes8221; (which solve simultaneously virtually any theory of gravity) mentioned.

Refs.: M. Ortaggio, V. Pravda, Electromagnetic fields with vanishing scalar invariants, Class.Quant.Grav. 33 (2016), 115010; S. Hervik, M. Ortaggio, V. Pravda, to appear

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