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ON THE ANALOGY BETWEEN
THE MAXWELL ELECTROMAGNETIC FIELD
AND THE ELASTIC CONTINUUM

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We attribute the action at a distance in electromagnetic phenomena to the effect of the internal stresses in an absolute continuous medium called *metacontinuum*. We show that Maxwell equations are straightforward corollaries from the governing equations of an incompressible elastic medium with the shear waves corresponding to the electromagnetic waves. The main advantage of the new description is that it enables one to incorporate the nonlinearity, whose manifestations turn out to be the presence of the so-called Lorentz force, and a Galilean invariance of the model. Another generalization of the model consists in acknowledging a high-grade elasticity which introduces dispersion into the governing system. A self-similar solution is found for the plane dispersive shear waves and shown to result in red-shift even when the source of light is not moving. In order to detect the existence of an absolute continuum, a revision of the classical Michelson-Morley experiment is proposed in which the effect is of first order and is not canceled by the FitzGerald-Lorentz contraction.

Keywords: Maxwell equations, scalar and vector potentials, incompressible elastic continuum, dispersive effects in electromagnetic field, Doppler effect

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