FROM THE LORENTZ ETHER TO A SCALAR THEORY OF GRAVITY AND ITS IMPLICATIONS

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In the Lorentz-Poincaré version of special relativity (SR), the "relativistic" effects, beginning with the Lorentz contraction, are seen as absolute, as being due to a motion relative to a privileged frame of reference or "ether". We present a scalar theory of gravitation that extends Lorentz-Poincaré SR. We provide motivations for such a theory, including critical remarks about general relativity. That theory starts from an interpretation of gravity as Archimedes' thrust in a fluid "micro-ether", of which Lorentz's inertial ether is seen as the mean rest frame. Newton's theory propagates instantaneously, hence corresponds with the limiting case of an incompressible fluid. When combined with the Lorentz-Poincaré version of SR, the assumption of a heterogeneous gravitational ether leads naturally to assume effects of gravity on clocks and rods, hence to a curved metric. Motion is governed by an extension of Newton's second law to a curved spacetime, that implies a dynamics for a continuous medium. The main observational tests are discussed. The Maxwell equations in the presence of gravity need to postulate an "interaction energy", which might contribute to dark matter. The present state of calculating that energy in a galaxy is shown.

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Contents