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Derivation of generalized Einstein’s equations of gravitation in inertial systems based on a sink flow model of particles. (English) Zbl 1441.83007


Summary: J. C. Maxwell, B. Riemann and H. Poincaré have proposed the idea that all microscopic particles are sink flows in a fluidic aether. Following this research program, a previous theory of gravitation based on a mechanical model of vacuum and a sink flow model of particles is generalized by methods of special relativistic continuum mechanics. In inertial coordinate systems, we construct a tensorial potential which satisfies the wave equations. Inspired by the equations of motion of a test particle, a definition of a metric tensor of a Riemannian spacetime is introduced. Applying Fock’s theorem, generalized Einstein’s equations in inertial systems are derived based on some assumptions. These equations reduce to Einstein’s equations in case of a weak field in harmonic coordinate systems.

MSC:

83C05 Einstein’s equations (general structure, canonical formalism, Cauchy problems)

Keywords:

Einstein’s equations; gravitation; general relativity; sink; gravitational aether

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References:

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of electric charges, Progr. Physics, 2, 111 (2008) · Zbl 1153.83306

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