



EQUATIONS OF MOTION OF THE MASS CENTERS IN A SCALAR THEORY OF GRAVITY WITH A PREFERRED FRAME

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Communicated by Ramon G. Calvet

The theory considered interprets gravity as a pressure force. Thus, the scalar gravitational field defines the gravity acceleration field. However, it also determines the relation between the flat “background metric” and a curved “physical metric”. Here we derive the equations of motion of the mass centers of a system of weakly gravitating bodies in the second version of that theory.

We use the framework which was built and used for the first version. Namely, we use an asymptotic scheme of post-Newtonian (PN) approximation to derive the local (field) PN equations, and by integration inside the bodies we deduce from those local equations the equations of motion of the mass centers, using also an asymptotic framework for the good separation between the different bodies.

MSC: 70F15, 8308, 83C25, 83D05

Keywords: Alternative theory of gravitation, asymptotic expansion, post-Newtonian approximation, relativistic celestial mechanics

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