

The Modern Physics of Compact Stars and Relativistic Gravity

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An Almost Einsteinian Theory of Gravitation

A new version of relativistic theory of gravitation is proposed, in which the General Relativity is supplemented with two postulates. It is assumed in the first place that the part of metrical tensor describing the gravitational field is a covariant tensor and second that the gravitational field acts on the matter, on the non-gravitational field and on itself in a similar way (through the metric tensor). At last, in the theory proposed an allowance is made for the influence of Universe on the gravitating system under consideration.

The equations describing the gravitation field in the framework of proposed theory were derived and then the covariant (differential) conservation law, arising from an invariance of gravitational field action with respect to transformation of four-dimensional coordinates of space-time, has been obtained.

In its simplest version the proposed theory contains nine free parameters. At a particular choice of these parameters the theory is reduced to GR with a cosmological term. The differences of the proposed theory from other known versions of the relativistic theory of gravitation are discussed.

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