

Effective gravitational potential induced by a static metric of spacetime

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We analyse the non-relativistic approximation of the Dirac equation for slow fermions moving in spacetimes with a static metric, caused by the weak gravitational field of the Earth and a chameleon field, and derive the most general effective gravitational potential, induced by a static metric of spacetime. The derivation of the non-relativistic Hamilton operator of the Dirac equation is carried out by using a standard Foldy-Wouthuysen (SFW) transformation. We discuss the chameleon field as source of a torsion field and torsion-matter interactions.

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