

ESSAY 121 : THE EVANS ECKARDT THEOREM

This theorem results from a self consistent description of light deflection due to gravitation and perihelion and geodesic precession from the foundational definition of relativistic velocity in ECE2 relativity. The latter develops relativity in a space with non zero torsion and curvature using the familiar equations of special relativity. ECE2 relativity is Lorentz covariant in the general spacetime, and not just in Minkowski spacetime. As such, it unifies what used to be known as special and general relativity.

To many colleagues, the foundational concept of relativity is the relativistic momentum. This concept emerges from conservation of momentum in a Lorentz covariant theory such as ECE2. The definition of relativistic momentum can be developed into the Einstein energy equation, which defines the total relativistic energy. The relativistic hamiltonian and lagrangian include the total relativistic energy. In UFT328 it was shown that the most general description of precession emerges by solving the ECE2 hamiltonian and lagrangian simultaneously, without any further assumptions.

The relativistic velocity is defined as the Lorentz factor multiplied by the Newtonian or classical velocity. The Lorentz factor is the direct result of the Lorentz transformation of the late nineteenth century, a transformation which emerged from the Michelson Morley experiment and the introduction of concepts by Fitzgerald and Heaviside. In the Lorentz transformation from one frame to another, both time and space coordinates can vary, but the speed of light c remains constant. The parameter c is regarded as a constant defined in standards laboratories. Lorentz overturned the dogma of centuries by allowing time to be different in two frames of reference. This was the necessary radical departure from received opinion, one of the most radical shifts of thought in the history of science. In the older galilean transformation time and space are separate concepts and time is the same in all frames of reference. Only the space parameters change from one frame to another in the galilean transformation. It was soon found that the equations of electrodynamics are Lorentz covariant. ECE2 shows that they are Lorentz covariant in any space with the required non-zero torsion and curvature, and also shows that the gravitational field equations are Lorentz covariant in general space. These are major advances in thought.

The Lorentz factor uses the Newtonian velocity, so the foundational definition of the relativistic velocity can be expressed in terms of the Newtonian velocity. In papers such as UFT324 it has been shown that the experimentally observed light deflection due to gravitation can be explained precisely from the definition of the relativistic velocity, with no other assumption. An upper bound is imposed on the Newtonian velocity. The latter is unobservable in relativity, the observable velocity is the relativistic velocity. This precise and simple explanation of light deflection is an example of the Evans Eckardt Theorem, which is a theorem based on the foundational definition of relativistic velocity.

In recent UFT343 papers the Evans Eckardt theorem has been applied to Thomas precession and to geodesic or de Sitter precession. The method used was to rotate the frame of the Newtonian theory of gravitation at a constant angular velocity. This produces a conic section with rotating angle. This type of conic section was shown numerically to produce orbital precession, so the orbit of the Newtonian theory precesses, giving perihelion precession immediately. There is no need for the Einstein theory, a good thing because the torsionless geometry of the Einstein theory is completely wrong as shown in the classic UFT88 and in many other ways.

The de Sitter or geodesic precession was developed originally by de Sitter by rotating the frame defined by the Schwarzschild metric of the incorrect Einstein field equation. The Schwarzschild metric was, however, wrongly attributed to him, and was claimed for a long time to produce a precessing orbit that can be defined as a conic section with its angle

multiplied by a factor x , known in previous UFT work as x theory. So rotating the Schwarzschild metric is equivalent to replacing the angle used in x theory by a rotating angle. The Evans Eckardt Theorem is a general theorem based directly in the definition of relativistic velocity and relates the orbit used to find the relativistic velocity in the rotating frame to the Newtonian velocity in the rotating frame. It can also relate the precessing orbit of perihelion precession to the Newtonian orbit, and in general the orbit of any precession to the Newtonian orbit. It is a general constraint equation of all cosmology.