Essay 100: The Fundamental Origin of Planetary Precession.

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The x theory is able to describe planetary orbits in a simple and straightforward way, and is also able to give values for photon velocity and photon mass. It is based on a correct geometry in which the Cartan spin connection is the angular velocity and in which Cartan torsion is well defined. In contrast the hugely elaborate Einstein theory is geometrically incorrect and results in an unphysical infinity (UFT264). The mathematically correct force law of a precessing ellipse is the Leibniz force law of 1689 multiplied by the square of x. If this correct force law is equated to the incorrect Einstein force law, x goes to infinity, meaning that the Einstein force law does not give a precessing ellipse and can never be correct. These simple results have been obscured by a century of meaningless dogma.

On the philosophical level it is necessary to obtain a deeper understanding of these developments by finding the fundamental origin of x. For a given mass M and a given half right latitude alpha, x is a universal quantity, the same for all precessions inside and outside the solar system. The largest known precessions occur in systems of two stars orbiting each other, but even then x is close to unity. It is known from several UFT papers that as x becomes larger the precessing or rotating ellipse starts to develop wholly unexpected properties which have been given the appellation “fractal conical sections”. These can become exceedingly intricate in the limit of infinite M / alpha. The vague dogma of the preceding century asserts that in such a limit there exist “black holes”, even though astronomers freely admit that they do not exist! This is Alice wandering in a very expensive Wonderland. In x theory the intricacy of the orbits is simply the result of the property of the cosine of x multiplied by theta, and nothing else. So such orbits may exist and may be observed in future.

In UFT265 it has been shown that the origin of x is the famous Thomas precession, in which the Minkowski metric is simply rotated at an angular velocity omega. The Thomas precession was first considered in UFT110. In UFT265 it produces the factor x straightforwardly by use of the equivalence theorem for angular kinetic energy. This procedure defines the square of the Thomas velocity as 2MG / r, where M is the attracting mass around which a mass m orbits, G is the Newton constant and r the radial coordinate. The Thomas velocity is the linear orbital velocity of a point on a circle, and is equivalent to a circular orbit and equivalent to a rotating frame on which the ellipse rotates or precesses. Therefore the distance r is equal to the half right latitude alpha. This inference immediately gives the precise experimental result for x without any approximation or further assumptions.

So the fundamental origin of all precessions of closed planar orbits is the rotation of the Minkowski metric using a constant angular velocity, which in ECE theory and x theory is a spin connection of spacetime. In an elliptical orbit, and indeed all closed planar orbits, the turning point also occurs at alpha. At this point the alpha of the circle or rotating frame is the same as the alpha of the ellipse. So the factor x is imparted to the ellipse at this point. It follows that the same factor x is imparted to all points of the ellipse, because all points rotate experimentally with the same x. The point of observation is the perihelion, because this can be found experimentally as the distance of closest approach of m to M. It is concluded that the precession of the perihelion is due to the rotation of a Minkowski spacetime with an additional constant angular velocity, or spin connection of spacetime. The square of theThomas velocity is therefore 2MG / alpha for any type of orbit, and this is exactly what is found experimentally to very high precision. The half right latitude of an ellipse is a multiplied by 1 - epsilon squared, where a is the semi major axis, and epsilon the eccentricity.

In order to clarify these concepts the circular orbit or rotating frame may be thought

of as a rotating cog wheel which locks in to the ellipse when r is the same as alpha for both the circle and the ellipse. There is only one such point, the turning point, at which r is the same for both the circle and the ellipse. The rotating circular cog wheel locks in to the elliptical cog wheel when r is alpha and rotates the elliptical cog wheel, the rate of precession is defined by x with r the same as alpha.

The Thomas precession is well known in atomic and molecular spectra and was discovered in 1925 by Llewellyn Hilleth Thomas at the Bohr Institute after Uhlenbeck and Goudsmit has sent Bohr a letter on their new theory of spectra. The Thomas half has been inferred in several previous UFT papers from the ECE fermion equation. The Thomas precession is ubiquitous in nature at all scales, and can be observed in a pendulum as well as in precessing planets and pin orbit coupling in atomic and molecular spectra.