Essay 104: The Three Dimensional Binet Equation

The original Binet equation gives the force law in two dimensions for any two dimensional orbit, and is useful in astronomy. It was inferred by Jacques Philippe Marie Binet (1786 - 1856), who was professor of astronomy at the College de France and Chevalier de Legion d'Honneur. Binet was dismissed from his post at L'Ecole Polytechnique by King Louis Philippe because of his support for the previous King Charles X. As usual the Binet equation was derived in two dimensions, using the plane polar coordinates and is equivalent to the force law from a lagrangian analysis. In previous UFT papers the two dimensional Binet equation was used to show that the force law of the precessing ellipse cannot be that derived from the Einstein field equation, and this result was reinforced during the development of x theory this year. These results alone are enough to refute the Einstein equation completely.

The two dimensional Binet equation uses the plane polar coordinates r and phi. However, it is now known that all orbits are three dimensional, so the Binet equation must be developed as an equation in the spherical polar coordinates r, phi and theta. The three dimensional Binet equation gives the force law for any observed three dimensional orbit, for example a three dimensional galaxy of arbitrary geometry in three dimensions. In general the force law will not be the inverse square law of Hooke and Newton, and it will not be the force law of the Einstein general relativity. Both of those force laws fail completely in galaxies, notably the whirlpool galaxies observable in the Hubble space telescope. The Hooke Newton and Einstein theories fail because the velocity of stars in the outer regions of the whirlpool galaxies goes to a constant. This was observed experimentally in about 1958. Both the Hooke Newton and the Einstein theories claim that this velocity goes to zero, so they are both completely wrong. This inconvenient fact was covered up by standard physics and the astronomer who reported the fact was vilified and ostracized. Later on the arbitrary theory of dark matter was introduced to try to salvage the tattered remains of the Einstein theory. Dark matter has been refuted experimentally, so that leaves ECE theory as the only correct and generally covariant unified field theory.

The ECE theory explains the velocity curve of a whirlpool galaxy easily and straightforwardly, as described in some of these essays and in previous UFT papers. In two dimensions the orbit of stars in a whirlpool galaxy is a hyperbolic spiral. The Binet equation in two dimensions shows that the force law needed for a hyperbolic spiral is an inverse cubed force law, not the inverse squared force law of Hooke and Newton, and not the force law of Einstein, which is inverse squared plus inverse fourth power in r. These results must now be developed in three dimensions. This aim is achieved straightforwardly by replacing the angle phi of the two dimensional Binet equation by the angle beta, which is defined in terms of phi and theta of the spherical polar coordinate system. When this is done the orbit of stars in a whirlpool galaxy becomes a function of phi and theta, and also a function of L divided by L sub Z, where L is the total angular momentum and L sub Z is its Z component. This same ratio is responsible in three dimensional orbit theory for the tiny precessions of the perihelion of planets and other objects of the solar system when three dimensional orbit theory is used.

Therefore the three dimensional Binet equation is obtained from the hamiltonian and lagrangian in which the potential energy is a function of r only and in which the kinetic energy is a function of r, phi and theta. The kinetic energy can be expressed as a function of r and beta. This procedure amounts to a new general law of orbit theory, and may also be used for orbital theory in atoms and molecules. So gravitation and electromagnetism are unified in this sense. The three dimensional Binet equation is a rearrangement of the force law derivable from the lagrangian expressed in terms of r and beta. For example, if the orbit is a three dimensional conic section, a conic section in beta, the Binet equation gives an inverse square

law of attraction between a star m and a mass M at the centre of the galaxy. If the orbit is a three dimensional hyperbolic spiral in beta, the Binet equation shows that the force between m and M is inverse cubed. The advantage of the three dimensional Binet equation is that it gives the general force law for the general three dimensional orbit.

It is ironic that a subject that claims to be objective should vilify and ostracise an objective astronomer who discovered the velocity curve of a whirlpool galaxy, but this is par for the course in the history of thought, or more accurately, lack of thought. Binet himself was dismissed merely because he supported Charles X, but bounced back in history while Louis Philippe was forced to abdicate in 1848. The standard physics has also been forced to abdicate.