

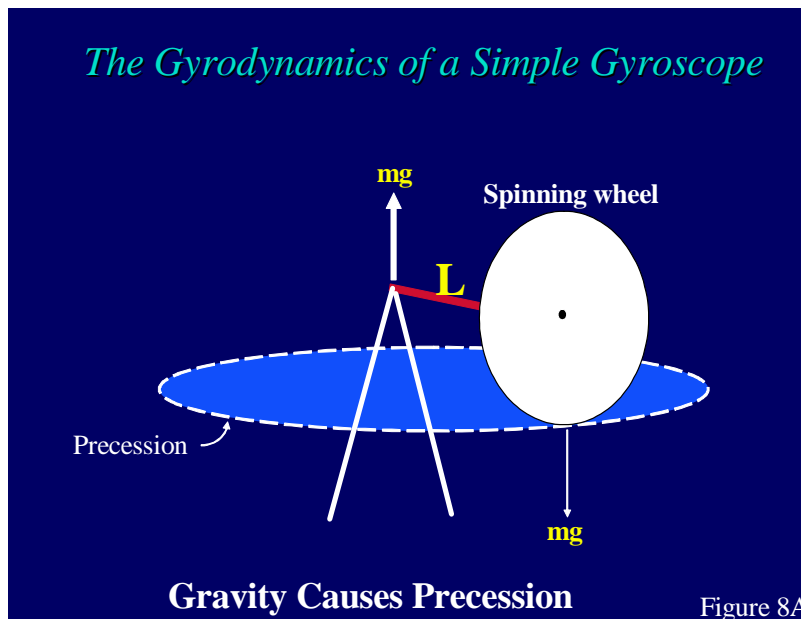


CHAPTER EIGHT

The Precessional Genesis of the Electron, Inertial, and Gravitational Masses

A Review of Gyrodynamics

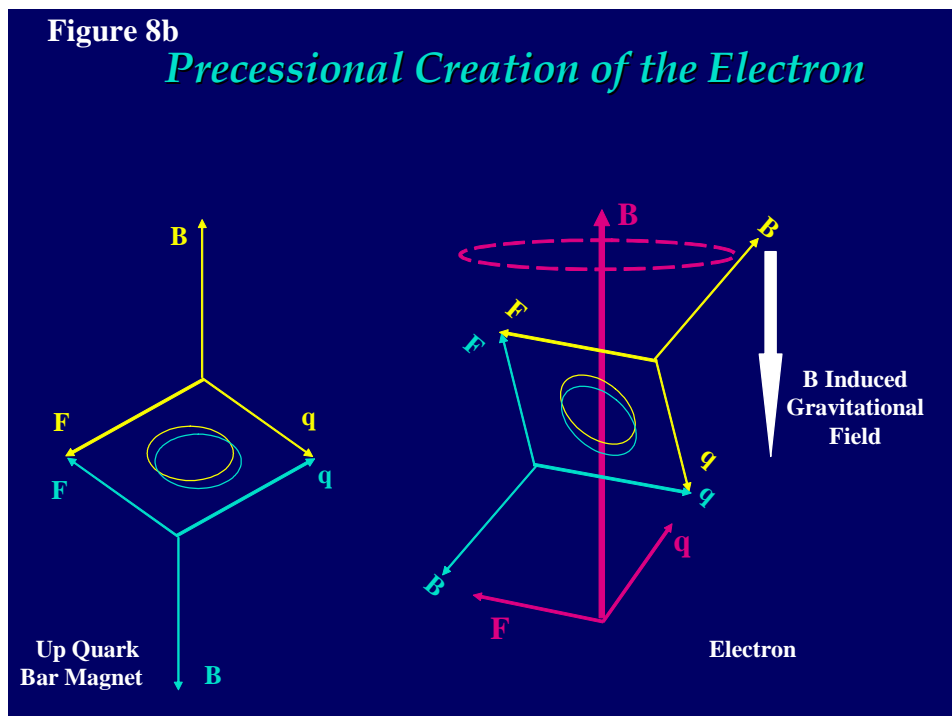
To truly appreciate the unique and bizarre behavior of a gyroscope go to the appendix and access the video clip entitled [Video Clip of Precessing Bicycle Wheel](#). Dynamics of this bicycle wheel gyroscope may be examined through Figure 8a. The white spinning wheel spins on its red axel. The axel is supported, i.e., pushed up by the inverted V shaped stand. This stand is analogous to the rope pulling up on the axle of the bicycle wheel depicted in the video. As the white spinning wheel spins on its axle, it simultaneously rotates about the support stand. The bicycle wheel in the video clip rotates about the rope. Both instances of rotation are called precession. As the wheel precesses, the support stand exerts an upward force on one end of the axle while gravity exerts an equal but opposite force on the other end, pulling the wheel downward. Gravity pulls down on the free end of the bicycle wheel's axle as the rope pulls up on the opposite side. Intuitively, one would expect the wheel to "flop" over. Counter intuitively it remains upright, revolving about in a circle perpendicular to its spin. The angular momentum vector, L , points along the axle. The pull of gravity causes the angular momentum vector to tend toward a change in direction. The dynamics are such that instead of the wheel flopping over, the change in angular momentum will force the wheel to precess. *The downward force of gravity will cause a spinning wheel to precess.*



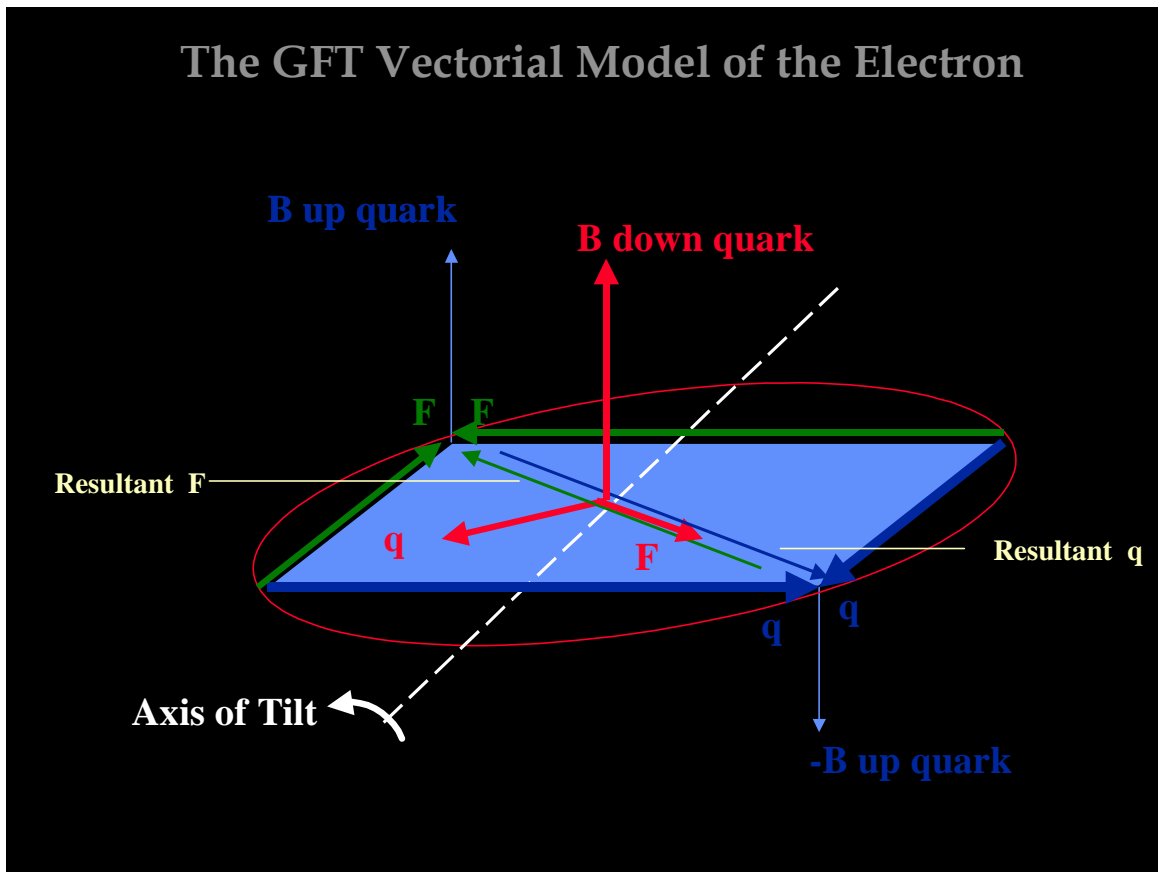
The Quark Structure and Formation of the Electron

A bar magnet, in effect, is a magnetic dipole. When a magnetic dipole is subjected to a magnetic field it will precess about the lines of force of that field. As shown in Figure 8b, the up quark possesses a magnetic dipole and should therefore behave as a bar magnet. (Note vectors are not drawn to scale) If subjected to a magnetic field the up quark should precess about the lines of force of that applied field. Suppose we apply such a field to the up quark via the magnetic field generated by a moving down quark. As shown in Figure 8b, the up quark should now precess about the magnetic field vector B of the down quark. This situation is exactly analogous to that of the bicycle wheel gyroscope previously examined where the spinning wheel corresponds to the combined orbits of the two spinning charges contained within an up quark. In this configuration the opposing B fields form the "axle", i.e., the magnetic dipole of the up quark. By forcing precession upon the up quark component of this up quark/down quark pair an obligatory torque is created where the dipole of the up quark coincides with the direction of the angular momentum vector, L . This torque must possess a moment arm that coincides with L , in addition to a normal force component. It is this normal force component which is manifest as gravity. It is this phenomenon of forced precession that is the genesis of gravity and inertial mass. It was previously demonstrated that the dynamics of a gyroscope are such that gravity can cause precession. The GFT finds that the converse is also true, i.e. forced precession of quarks will generate gravity.

Gravitational mass issues forth from the application of the magnetic field, generated by an accelerated GFT down quark, upon a GFT up quark. An orthogonal interaction of the GFT up and down quark constitutes the formation of an electron. The creation of mass is the obligatory consequence of forced precession applied to rotating charge.



To further demonstrate the quark structure of the electron given the previous analysis it is given that the magnetic field of the GFT down quark is free to interact with the magnetic dipole of conformer 4. Following a momentary interaction of the two the down quark should, ostensibly, be free to continue on its way propagating through space. If the GFT model of the electron is correct then some force must compel the down quark to aggregate with the up quark and thus form an electron. Referring to Figure 8b, as the B field of the down quark interacts with the magnetic dipole of the up quark the vector plane defining the up quark will tilt downward, thus the manifestation of gravity. No matter the tilt of the plane the orthogonal relationship between the resultant up quark charge and the charge of the down quark remains constant. Coincidentally, the tovacian force vector defining the up quark interacts in parallel with the force vector of down quark. This parallel interaction is electrostatic in nature and forms an attractive force.



As the plane tilts there is a diminution in the electrostatic summation of these attractive forces however a component of this summation force is always present until the plane is tilted parallel to the B vector of the GFT down quark or until the B vector of the GFT down quark is orthogonal to the magnetic dipole of the up quark. Note however that as the electrostatic summation force diminishes the resultant tovacian force forming between the GFT up and down quarks increases

until it reaches its maximum at full tilt of the up quark plane, i.e. when the plane is tilted parallel to the B vector of the GFT down quark. This force cannot be a manifestation of the conventional interpretation of the strong force acting through gluons since the strong force putatively subdues electrostatic repulsion. It is these attractive forces that are responsible for the binding of the GFT up and down quarks to form the electron.