A Unifying Kinetic Particle Theory of Physics[1]

by

J. M. Brown

INTRODUCTION AND SUMMARY

A unifying theory of physics is advanced which is based on seven postulates:
space is absolute, everything is comprised entirely of one type particle, the
particles can neither be created nor destroyed, the particles move with an
average speed equal to 1.4 times the speed of light, the particles are spher-
ical, the particles are smooth, and the particles are elastic. The particles
pervade the entire universe and localized condensations make up radiation and
matter. The condensations are produced by a newly discovered self-induced
pinch effect. All composite particles (radiation and matter) are eigen states
of the localized condensations which are held together by the background part-
icles. Even in the condensed states the basic particles move at 1.4 c. Radia-
tion particles translate at "sonic" speed for the background (i.e., at speed
c) while the basic particles in matter follow closed curved paths so that the
center of gravity of matter can be at rest or can be moving with linear veloci-
ties lower than the speed of light. Motion of the basic particles at the speed
of light, in radiation and matter particles, is achieved by adding new back-
ground particles to the forward face and ejecting basic particles from the aft
face. The characteristic eigenstates are the "quantum" properties of the uni-
verse, the "sonic" speed characteristic of radiation and matter are the "clati-
vity" properties of the universe.

THE BRUTINO

The basic particle which makes up the universe is named the brutino. The mass of an item is defined as the number of brutinos which comprose the item. The brutinos move in a straight line except when they collide. The collision interaction time for brutinos is instantaneous. Collisions are such that for a reference frame in which the normal component of velocity just prior to impact are equal and opposite, then the normal components are reversed while the tangential components are not affected. This collision mechanism provides the definitions of "elastic" and "smooth."

The set of postulates given above rigorously results in the following six universal laws of physics:

1. Everything in the universe is made up of one type of particle, the brutino.

2. Everything always moves with constant velocity unless it collides with something else.

3. Mass can neither be created nor destroyed.

4. Linear momentum can neither be created nor destroyed.

5. Angular momentum can neither be created nor destroyed.

6. Energy can neither be created nor destroyed.

Law number 2 is Newtons (or Galileo's) first law of motion. The next two of Newton's laws result directly from the definition of force. A force is defined such that a brution is said to experience a force when the brutino experiences collisions with other brutinos. A force is measured by the number

of collisions per unit time times the change in linear momentum produced by each collision. A force thus is defined as mass times acceleration and forces always occur in pairs, each element of which is equal and opposite the other.

RADIATION PARTICLES

A radiation particle is a dense collection of brutinos which translates at "sonic" speed (sonic as determined by the average speed of the background brutinos). The first two questions concerning radiation particles are the stability mechanism and the propogation mechanism. Mechanisms of stability and propogation are described now with a qualitative proof that these mechanisms are valid. The approach taken is to show that a stabilizing pinching force is generated by initial impacts of the background particles on a stationary composite particle (i.e., a stationary localized condensation), that if held together the composite particle can move without slowing down, and that when the composite partilce is moving the initial impact pinching force still exists and only initial impacts are of any consequence.

This paragraph shows that a radial force directed toward the center of a composite particle is produced by initial collisions between the background and the composite particle when the composite particle is at rest. This inwardly-directed force is termed a pinching force. The force results from a diminishment of the number of background particles along a ray as the ray passes through the composite particle. Since the force produced on the composite particle is proportional to the number of background particles available for impacting, the force due to the ray gradually diminishes. As equal and opposite ray similarly diminishes. The difference in the forces produced by these two rays compresses the composite particle. thus, initial collisions

between the background particles and particles making up the composite particle produce a stabilizing pinching force.

In this paragraph it is assumed that a composite particle can remain stable; then it is proved that there is a non-zero velocity at which thee particle can move with respect to the background without slowing down. Determination of the magnitude and invariance of the speed is almost trite. The composite particle, as constituted, is merely a dense region of the background gas, and its mechanism of transmission is as a wave in which the front fact continually gains particles while the aft face continually loses particles. Transmission speed is independent of the density and is the "sonic" speed for the gas. This mechanism, of course, covserves energy and linear momentum for the composite particle.

The next step in the proof is to show that when the composite particle is moving at sonic speed and initial collision pinching force will still be generated. For a moving composite particle a transverse pinch effect will be generated, as in the stationary ease, since the force's existence (but not necessarily its magnitude) is independent of the axial motion.

To demonstrate axial stability, instead of considering the forces acting, it is more convenient to rely upon proven theorems of gas dynamics. A point sound source in an ideal gas produces a wave of energy which is diminished axially only by the inverse square spreading. Since the particles in this present theory act like ideal gas atoms, and since the transverse pinching force is generated to prevent transverse spreading, the composite particle will not spread/or contract axially. Thus, initial collision transverse and axial pinching forces exist for the moving composite particle.

The final step is to show that only initial collisions are of any consequence. For this proof it is presumed that the composite particle is sufficiently of porous so that the probability of collision is low for a given background particle. (Incidentally, this is a restriction which probably is not required for the mechanism.) The probability of a second collision then is quite low and can be neglected. Also, since the particle is moving at sonic speed there is no chance of the background being disturbed by continual collisions with the composite particle and, thereby, producing a feedback which could affect stability. thus, it appears that the stability and propogation mechanisms described for radiation particles are valid.

A photon is believed to be a spherical composite particle with a density which is greatest at the center and which gradually decreases away from the center until it approaches the background density. Defining the size of a photon as the volume which contains a given percentage of its mass, then all photons are believed to be approximately the same size; the mass variation is due primarily to a density variation. The principal way a photon vibrates is believed to be planar with its double amplitude equal to its wave length. As the photon is perturbed from its nominal path the transverse forces opposing the transverse motion increase as a result of the photon moving toward those opposing brutinos and the transverse forces in the direction of the transverse motion decreases. These forces are stabilizing and produce the characteristic vibration. As the photon mass is increased the restoring force apparently increases at a greater rate than the rate of mass increase. The increase in force is due to mass increase and decrease in spacing between brutinos. The photon has angular momentum about an axis which passes through the photon nominal path perpendicular to the plane of its path. The angular momentum

is defined as the average absolute value of the photon linear momentum times the perpendicular distance the photon is from the point formed by the normal projection on the nominal path. This angular momentum is invariant for all photons since the amplitude and wave length are inversely proportional to the mass. This constant presumably is Planck's constant, h. Based on these presumptions, the energy of a photon is given by $h\nu$, where ν is the number of cycles per unit time which the photon experiences.

Neutrinos and antineutrinos are similar to photons except that they rotate about theer translational path instead of vibrating transversely. Their angular momentum, Planck's constant divided by two, is a result of this rotation. The neutrino is left-handed and the centineutrino is right-handed.

Photons, neutrinos, and antineutrinos are the radiation particles. The first radiation particle formed in the universe probably was formed as a result of the chance collection of background brutinos. Many radiation particles are continually formed by this process but an appreciable rate of production results from matter collecting background brutinos and later limiting them in the form of radiation particles as explained in the next section. The particles also are destroyed, but their lifetimes are in the order of a billion years.

The rate of production and destruction of radiation particles, other than their conversion to matter and re-emission by matter, is so small that all of present day physics is based on the presumption that the particles can neither be created nor destroyed. However, as will be shown later, the formation process provides good explanations of gravitation. The small galactic red shift which is observed is explained by a gradual destruction of a photon.

ELECTRONS

An electron is a toroidal shaped cloud of brutinos. The brutinos move with an average velocity with a magnitude of 1-4c and which has a tangential (rotational) component of c and a component around the toroid across section. These two components result in a helical motion of brutinos making up the electron. The negative electron is left-handed and the positive electron is right-handed. The electron is held in its circular shape by the same type of pinching force that holds the radiation particles together. The electron is propogated in its circular path by the same wave type mechanism that the radiation particles utilize.

The phenomenon of charge results from flow fields of the background brutinos. The flow pattern is a circulation which consists of a component in through the center of the toroid and around the outside which is in the direction of the brutino component of motion around the toroid cross section and another component which is in the direction of the rotational motion of the complete toroid about its center of mass. The flow patterns for unlike charged electrons mesh together so that the background brutinos press the electrons together while like charged electrons flow patterns interface and repel each other.

The stabilization mechanism of the electrons is presumed to result in only one stable mass and radius of the electron. Further, as time passes an electron is believed to continually collect background brutinos and, therefore grow in mass. At certain excess mass levels, an electron will emit either a photon along its axis of rotation or a neutrino (or antineutrino) in the plane of the toroid. this brutino collection-photon emission process is the source of a stars energy and the brutino collection-neutrino emission process is the cause of gravitation.

An electron has angular momentum about the axis perpendicular to its toroidal plane. The angular momentum presumably is due to the electron and to the charge flow pattern of the background brutinos. The value of the angular momentum is Planck's constant divided by two.

When an electron is at rest (with respect to the background) it has the shape of a circular toroid. when the electron moves it takes an elliptic shape which moves parallel to the minor axis. The thickness of the toroid is the greatest at one end of the major diameter and a minimum at the other major diameter end. This difference in cross section provides the mechanism of translation of matter. The direction of motion is the same as the direction of the tangential velocity of the ellipse at the major diameter end with the greater thickness. This mechanism results in an electron's velocity being limited to a value less than the speed of light, since at that velocity the major diameter end with the smaller thickness must have a zero thickness. Thus, before reaching the speed of light an electron will be converted into a radiation particle.

Collisions of photons with electrons and electrons with electrons make up most of the phenomena observed in nature. When a photon collides with an electron the photon breaks into two photons. One photon is captured and becomes a part of the electron and the other rebounds in a random direction. This mechanism results in an electron having a moving mass greater than its rest mass. The amount of mass growth is derived from the laws of the conservation of energy and linear momentum. The mass at velocity is equal to the rest mass divided by $(1 - \beta^2)$ where β is the speed of the electron divided by the speed of light. During the collision of two electrons, photons are interchanged in a manner analogous to the photon-electron collision.

By accelerating an electron through a magnetic field (a magnetic field later is indicated to be a background brutino flow pattern) the ratio of its force due to charge divided by its mass can be dtermined as a function of the electron velocity. The force change due to motion is increased by the factor $\sqrt{1 + \beta^2}$ since the force lines cut are increased by this factor. The mass grows by the factor $1/(1 - \beta^2)$. Thus, the force due to charge divided by the mass increased by the factor $\sqrt{1 + \beta^2}(1 - \beta^2) \approx \sqrt{1 - \beta^2}$. This factor, of course, correlates the observations.

The amount of energy available in photon form which is contained in an electron, or any type of matter, is equal to the mass of the matter times the square of the speed of light. This, of course, is the famous formula of Einstein $E = Mc^2$.

Electrons can be formed by the chance collection of background brutinos. Another electron source probably is provided by electron pair production by the collision of sufficiently massive photons.

Electrons, like photons, are extremely stable and, other than conversion into photons of equal mass, electrons have lifetimes in the order of a billion years.

NUCLEAR PARTICLES AND ATOMS

A nuclear particle consists of two or more electrons which have a common axis of rotation and a common center of gravity. The electrons thus form concentric rings in a plane. Nuclear particles consist of the same number of positive and negative electrons or exactly one excess positive electron or one excess negative electron. The innermost electron for matter is a positive electron while for antimatter it is a negative electron. Nuclear

particles are held together by the same type pinching force as that holding
an electron and radiation particles together.

An atom is the simplest assembly of uncharged matter. An atom consists of a
central nucleus of protons and usually neutrons and a number of electrons
which orbit in spherical shells. The nucleus is held together by a pinching
force similar to that which holds the previous particles together. However,
the pinching force has reached the limit of its range in the case of large
nuclei. The degradation in force at longer ranges is due to brutinos scat-
tering back into the region where the force difference is tending to be gen-
erated and thus negating the pinch effect. The orbital electrons, as all
the simpler forms of matter already discussed, have only distinct radii at
which they can remain stable. Thus, balancing the centrifugal and electro-
static forces gives only one linear velocity, and only one vlaue of electron
mass--since mass depends directly upon the speed, for an electron in a given
orbit. In addition the angular momentum of each orbit then results as Planck's
constant divided by two. With these constraints one precise value of photon
mass is emitted or absorbed as an electron changes from one orbit to another.

GRAVITATION AND MAGNETISM

A gravitational field is set up by matter. The field consists of background
brutinos flowing into the matter, a slightly lesser number of background
brutinos flowing out of the matter, small amount of neutrinos and antineutrinos
flowing out, and an even smaller amount of photons flowing out. Another
mass placed in the vicinity of the matter will feel an inward force since
the brutinos in the form of neutrinos and antineutrinos do not transfer mo-
mentum to the mass.

Magnetism is a flow pattern of the background brutinos which is set up around and through a piece of matter by the matter. In order for the matter to set up the flow it is necessary that its electrons take an elliptic shape as if the matter were going to move. However, if instead of moving the matter remains at rest then the background brutinos will flow into the matter opposite the direction which the motion of the bar would have had.