RADIANT PRESSURE MODEL OF REMOTE FORCES

GRAVITY IS A PUSH, (not an attractive force)

Author: Stanley V. Byers
Copyright (c)1995 Stanley Byers
Collaborator: Michael D. Byers

Abstract

All forces that act through a distance are attributed to cosmic radiant pressure and shadowing by matter. All matter exists as interference patterns in the Inertial radiant frequencies of space. A surface gravity and/or radiant pressure limit are shown to exist when the radiant flow is totally shielded by large planets. The prime cause for the inverse square law is shown to be a natural result of shadowing geometry with distance. Data and graphs are presented indicating the gravitational shadowing for our Solar system planets.

A model of inertia is given where inertia is a result of unbalanced radiation absorption during acceleration. The unbalance is ascribed to a combination of the Doppler effect and the quantum nature of photons.

With a systems model for the cause of remote forces, various experiments to achieve artific ial interaction become self evident. A multitude of combinations of the electrostatic, magnetic and inertial forces may be tried, with the objective of shielding or focusing the radiation to modify the local effects of gravity and inertia upon an object.

MODEL FEATURES

Inertial non electromagnetic non particulate radiation pervades all space and matter. This primordial radiation is designated Inertial radiation in this model.

All matter exists as interference patterns or deformations in the Inertial radiant frequencies of space. Inertial radiant flow and shadowing cause all remote forces. Inverse distance squared formulas remain unchanged. Inverse distance squared is applicable for shadow area and shadow density. Gravitational shadowing shows a limit and topical variations.

Gravity shows total shielding on large planets only. Radiation manifests an Inertial and EM spectrum. Nuclear shielding occurs for all nuclei. Nuclear shielding replaces mass conversion. Electrons and ions interact with the EM spectrum and the Inertial spectrum. Inertia is due to the Doppler effect and photon characteristics.

Electricity may demonstrate an absolute zero (+), similar to the heat system. Magnetic lines are a form of matter. Molar heat capacity supports heat shell model of heat.

INERTIAL RADIANT FORCE SYSTEM

This paper provides a physical systems model for the transmission of all forces that appear to act through a distance in an absolute vacuum, and for redefining the essence of nuclear particulate matter. The basic ele ments of this model are the existence of isotropic radiant flow in free space and matter, and matter existing as interference patterns or deformations in the linear flows.

Matter's shadowing interactions with these non particulate radiant spectra cause forces of attraction and repulsion. A free body in open space is symmetrically illuminated with this radiant flow, and as it shields or shadows some of the radiation passing through it, the resultant forces are also symmetrically balanced.

As the Earth and planets interact with the radiation, a shadow is formed around each planet. The free body drifting into the shadowed radiant space would be subjected to an unbalanced flow due to the shadow from below. The radiant flow from above is no longer balanced from below and a resultant force or radiant "pressure" toward Earth appears on the free body. This force is normally called gravity or " mass attraction ".

103INERTIAL RADIANT SPACE AND MATTER

In the classical concept of matter, the smallest stable nuclear particles consist of a collection of multi-layered concentric spinning radiant electromagnetic energy waves independently existing in empty space. In this new model of matter and forces the smallest stable nuclear particles consist of interference patterns in the ever present isotropic linear radiant individual spectra of space in the form of standing wave vortices. If it were possible to shield this new model of a particle from its individual radiant spectra it would cease to exist, in the same manner that a water whirlpool will vanish if the water is removed. In the classical models, if a particle could be completely shielded from radiant spectra it would continue to exist in empty space, independent of the infinite frequency spectrum. In this model empty space cannot exist. Each and every point in matter and in space in the universe is completely permeated with the isotropic inertial radiation. Although this radiant spectra is called inertial radiation it is non particulate and does not have momentum or inertia. It causes gravity, inertia and electromagnetic radiation, but it is not electromagnetic radiation.

In the classical concept of electromagnetic radiation, all radiation in space had to originate from some form of matter. This may be true for the electromagnetic spectrum. In this model, matter is a deformation of the inertial radiation and the radiation would continue to exist without the existence of matter. Yet, matter would cease to exist without the inertial radiation. The source and cause of the primal inertial radiation is not proposed in this model.

INVERSE SQUARE LAW

The force from the effect of the omnidirectional radiant shadow emanating from a body in isotropic radiant space is exactly described by the inverse square law for projected area and or shadow density. For totally black shadows, the force at a distance (R) is directly proportional to the object's projected shadow area.

104.1 Projected area = Original Area / R squared

From projection geometry, when the distance is doubled, an object appears one half as tall and one half as wide and therefore has one quarter the apparent original area. Thus, the inverse square law with distance (R).

For non-black shadow bodies and cases near planet surfaces where shadow density is the predominant factor, the shadow density system is the virtual image of the light illuminance system and is described by the same inverse square law equation.

104.2 Shadow density = Original Density / RXR

104.3 Light Illuminance = Source Intensity / RXR

It is of interest to note that the two features of the shadowing effect, projected area and average density, can be exactly described, simultaneously, by one inverse distance squared equation.

In this model our normal empirical inverse square laws for the three force at a distance equations are this unified force radiant shadow equation. The unbalanced force is directly proportional to the shadow effect at that point. In any of the three force systems, objects shadowing the same radiant frequencies would appear to be attracting each other, but the unbalanced flow of radiation is the source of the force.

Each force system equation has its own force constant, determined by the dimensional units of the system and the interacting radiant spectral density.

104.4 Electrostatic Force F = KQ'Q''/RXR

104.5 Gravitational Force F = GM'M''/RXR

104.6 Magnetic Force F = UM'M''/RXR (directional)

Inertial force is treated in a later section of this paper. The strong force of nucleon attraction appears to be due to a form of shadowing other than this inverse distance squared system.

TOTAL SHIELDING AND WEIGHT LOSS

Any radiant flow and shadowing model of remote force has the obvious inherent physical characteristics of; (1) shielding and (2) an upper limit to the force per unit area available. Shielding will occur in a group of objects when some objects are deprived of radiant flow due to overlapping gray shadows, or black shadows or streaming of the flow. An upper limit to the available force per unit area occurs when all flow is blocked in a particular force spectrum system by total shielding.

The shadowing feature of remote force within our planetary system displays the characteristic of modifying the weight of some planets by shielding. Individual objects in a system do not necessarily cast only totally black shadows, if visible, the shadows would have many shades of gray. As gray shadow objects combine to form a body or planet, a given diameter is reached where the radiant spectrum incident on one surface does not reach the other surface. The shadow it then projects in a single direction in the solar system would have a black dot in the center and all shades of gray to the outer circumference of the shadow. For planets of this diameter, maximum surface gravitational force is nearly reached. Any remaining increase is due to additional shadowing of angular rays penetrating the planet that have vector components parallel to the diameter path.

Once a planet has achieved sufficient diameter to project partial black shadows, a portion of any added matter appears lost to the solar weight system. An example of this matter shielding characteristic is obtained by considering the apparent weight of our solar system planets and the planets' projected shadow areas, given in Table 1. Shielding is most evident when one plots planetary weight per cross sectional area vs the projected area, as in FIGURE 1. Weight per projected cross-sectional area is here abbreviated as densare, and has the same units as pressure. The total shadowing effect depends on the average DENSity and AREa of the shadow thus the abbreviation DENSARE.

For following comparisons it should be noted that DENSARE pressure and surface gravity are directly proportional and related by a constant. The densare graph, FIGURE 1, shows the densare of the smaller planets is essentially proportional to diameter. These small bodies are not large enough to stop all radiation, therefore, their integrated gray shadow DENSity and shadow AREa are exactly proportional to the total solar weight, mass and volume of matter. If all bodies had the same material density as Earth's and the shielding limit did not exist, all densare data points, including those for the large planets, would fall on the curve that relates projected area and volume on this semilog graph. For planets larger than Earth, total shielding and maximum radiant flow unbalance occurs. This total shielding is demonstrated by the plateau on the densare graph for planets larger than Earth. The densare, force per unit area, has reached the limit due to total shielding of the radiation and should be a universal constant for passive planets.

Figure 1
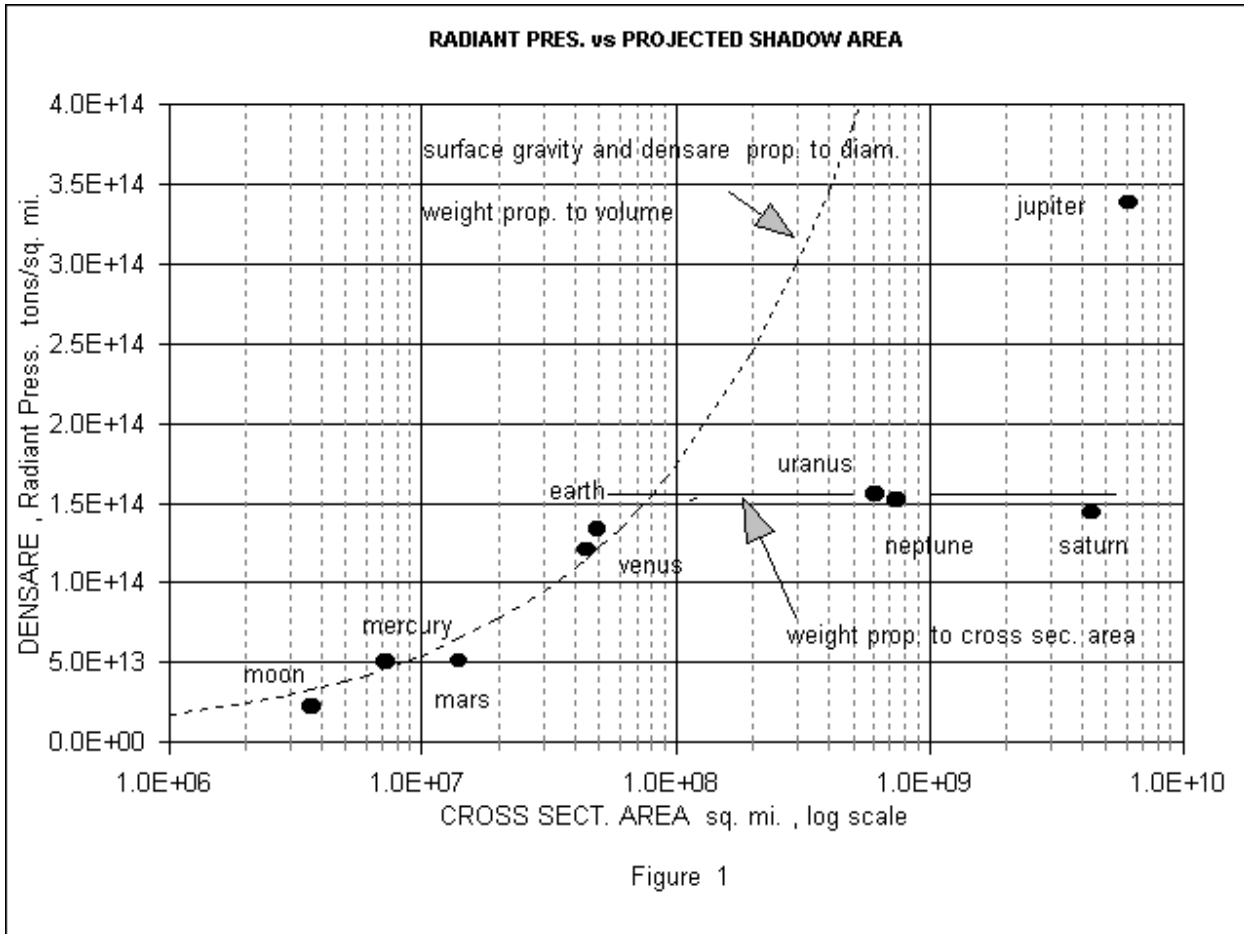
PLANET WEIGHT vs PROJECTED AREA Table 1

BODY	DATA SOURCE*	X-AREA million sq.mi.	VOL. cubic miles	DENSITY Water=1	DENSARE ep14 tons per sq.mi.
Moon	TL	3.66	5.28ep9*	3.33	0.221
Mercury	TL	6.65	12.9ep9	6.06	0.541
"	SA	7.2	--	5.4	0.503
Mars	TL	13.46	37.1ep9	4.12	0.524
"	SA	13.96	--	3.9	0.509
Venus	TL	45.13	228ep9	5.1	1.19
"	SA	44.4	--	5.2	1.21
Earth	TL	49.14	259ep9	5.52	1.34
"	SA	49.34	229ep9	5.5	1.34
Uranus	TL	683	20.2ep12	1.033	1.41
"	SA	616	--	--	1.56**
Neptune	TL	743	15.24ep12	--	1.56**
"	SA	743	--	1.7	1.52
Saturn	TL	4110	198ep12	0.685	1.52
"	SA	4370	--	0.7	1.44
Jupiter	TL	5809	340ep12	1.33	3.6
"	SA	6167	--	1.3	3.39
Sun	TL	587.7ep3	339ep15	1.41	37.4

*   TL-Time Life; SA-Scientific American.

Sci. American data used for Graph 1.

   ep = 1 x 10^...

** Corrected values per text.

TOTAL SHIELDING AND WEIGHT LOSS cont.

A radiant shadow theory suggests that an upper limit of flow unbalance should exist. It is fortunate that one limit happens to exist within the planet sizes available in our solar system. Once this DENSARE limit is reached, planet weight is no longer proportional to volume but is proportional to projected shadow area. The projected shadows of the large planets are completely black in the gravitational spectrum and cannot res pond to increased size by increased shadow darkness, but only by increased shadow size. If the exact diameter and solar system weight for each of the large planets was well established it appears that the densare values would be a common constant near, 1.52 X 10 exp 14 tons per square mile indicated by the plateau in the graph in FIGURE 1.

This suggests that the "Gas Planets" do not consist of gas, but consist of the common solar system gravel mix that exists in all of their surrounding moons and the remaining solar system planets and moons. The apparent low density and weight is here attributed to shielding in the gravitational spectrum. If the large planets were divided into Earth size portions, the hidden mass and weight would reappear. Beneath any liquid and cloud layers of these planets a planetary lander should find a surface structure just as firm as that found on Venus, Mars and our Moon. A sphere that consists of 90% gas would not have spots that remain in the same position and latitude regardless of the planets rotation.

In a radiant pressure model it is obvious that the pressure is due to the radiant flow. Yet the pressure is called DENSARE to demonstrate the importance of the unseen shadow DENSITY and AREA on the flow unbalance. This system of radiant flow and shadowing is similar to the action and reaction of applied force and inertia, one cannot exist without the other.

In a radiant pressure model the concept of force increasing without bounds, as proposed for the existence of a black hole, is not realistic. Once the spectrum responsible for the force is totally blocked there is no further method to increase the force per unit area.

In the current classical model of gravity there is no defined cause. Therefore it is possible to attribute many features to the model such as black holes, warped space, and big bangs, since there is no defined mechanism with obvious restraints and upper limits. In any model without limits one can propose a gravitational black hole that will swallow the universe. This upper limit of spectral flow naturally limits the size growth of planetary bodies, otherwise any sun or planet could grow to be a black hole.

DENSARE CONSTANT

The determination of the constant would be quite straight forward if the large black shadow planets did not have a gray shadow fringe. The relative proportion of the gray fringe area and black shadow area is determined by the material density of the planet's elements. A measure of the variation in the mix of elements is shown by the densities of the bodies smaller than earth. Our moon's density is 3.33 and Earth's is 5.5 with water as 1. Thus a minimum black shadow body, made of the moon's mix of elements, would have to have a diameter larger than a minimum black body made of Earth mix. The diameter ratios would be 5.5 to 3.33. When one neglects the apparently insignificant fringe areas, only two data points per black shadow planet are required to determine the densare constant; projected area and apparent weight. These are derived from diameter and satellite period, respectively.

The inaccuracies in the available planet cross sectional area data, Table 1, is demonstrated by the following comparisons. Scientific American data yields an area for Neptune of 730 million square miles.(1) The Time-Life data yields an area of 607 million square miles. Two aberrant data points on the constant section of the densare curve were in error in the original data, and when corrected, fall very close to the preferred value of 1.52 exp 14 tons per square mile. The Scientific American data point for Uranus was apparently in error because of the diameter. With a given surface gravity of 1.17 times Earth's and a mass 14.6 times Earth's it must have a diameter of 3.53 times Earth's diameter. The value listed is 4.06 Earth diameters. Time-Life data gives 3.73 Earth diameters for the diameter of Uranus. For these reasons, the Scientific American densare is corrected to agree with its published surface gravity.

The Time-Life densare of Neptune differs from the favored Scientific American data by an 8.5% diameter difference. The Time-Life diameter is equal to the values published early in this century. The Scientific American data is consistent with the 1968 occultation measurements of 49,500 km. For this reason, the Time-Life densare data for Neptune is corrected to the new diameter.

With these above corrections there is now little spread in the densare data of nine relatively independent data points. The densare of the three passive large planets approach a common physical constant of 1.52 X10 exp 14 tons per square mile.

(1) The necessary data is available in the September 1975 issue of Scientific American and the book "The Universe" in the Life Nature Series and is given in Table No's. 1,2,3,and 4.

SURFACE GRAVITY LIMIT

The surface gravity data for the planets also shows the maximum shielding and limited radiant flow unbalance phenomenon seen on the planetary densare graph. The gravity data, Table 2, has had all the gravity values multiplied by 1.335 for comparison with the densare data. A separate graph of the surface gravity is not presented since the normalized surface gravity data is nearly a duplicate of the densare data. All moons and planets smaller than Earth have a surface gravity proportional to their diameter and material density.

Planets larger than Earth, except Jupiter, have the limited maximum gravity, regardless of their projected weight, actual amount of matter, or diameter. The limited maximum surface gravity in our neighborhood of space should prove to be a constant for all the black shadow non-radiating planets. The gravity limit occurs when a planet's diameter is large enough to shield all radiant flow from below and the maximum flow unbalance results at the surface. An object on the surface has equal balanced maximum flow from every compass point on the horizon and has maximum flow from overhead, but no radiant flow from below. Maximum surface gravitational force due to maximum radiant flow unbalance occurs with a planetary diameter of approximately 1.17 times that of Earth's. In our solar system the planets that are large enough to block all radiation should have the same maximum surface gravity of approximately 1.14 times that of Earth's.

An infinite plane that is thick enough to create a black shadow would have the maximum gravitational pressure at its surface. Since it is an infinite plane, it would also have the same maximum gravitational pressure at any distance from the plane. Of course, none of our planets are large enough to be considered an infinite plane at a distance. Yet, near the surface of large planets such as Saturn, an infinite plane effect may occur, where gravity does not decrease per the 1/R squared ratio because the projected area would not decrease per the 1/R squared ratio. The Black Shadow path Length, LBS, for earth mix has been calculated to be 4,800 miles. The diameter of Saturn is 72,300 miles. This would bring the black shadow as seen from the surface of Saturn within 4 degrees below the horizon. Thus, the apparent cross sectional area at the surface is larger than the true equatorial cross section that would be projected at a distance. Therefore gravity may remain nearly constant at the limit, for some distance above the surface.

Orbital mechanics dictates that if gravity is constant with distance some peculiar orbit periods and radii for moons and rings of black shadow planets will result. Satellites with orbits close to the surface of these large planets would have wandering orbit paths, erratic periods and the periods would indicate a larger weight for the planet than satellites in remote orbits. The wandering orbit feature may account for the width and existence of the rings.

Jupiter's moons exhibit erratic periods with variations of 3 to 6 minutes, per the Jupiter section of the British astronomical society (Mens B.A.A. 8-83). At a given distance above the surface, the projected cross sectional area of the black shadow would approach the true cross sectional area of the planet. The gravitational pressure would then decrease with distance in proportion to the normal inverse square law for projected shadows. Since the black shadow of Earth is a large percentage (63.4%) of the total projected area, it is possible that the infinite plane effect may be evident to some small degree in our satellites orbits. This would cause satellites close to Earth to have a shorter period than expected in comparison to the period and distance of the Moon's orbit. The probe currently approaching Jupiter, if properly instrumented, should be able to measure and demonstrate the infinite plane effect, where gravity increases faster than the 1/R squared formula near the planet.

RADIANT PRESSURE LIMIT EXCEPTIONS

There are two unexplained exceptions to this gravity limit and mass shielding phenomenon in our solar system: The Sun and Jupiter. They both have a solar weight significantly larger than that predicted by their cross-sectional area and the gravity limit rule. Yet, their weight does not equal that predicted by their volume and an average mix of solar system elements. This indicates that some form of shielding does exist.

It is known that both of these bodies radiate significant energy in spectrums that present technology can detect. Jupiter radiates approximately twice as much heat as it receives from the Sun. Since these bodies radiate energy, it follows that they also absorb more radiance in other spectral ranges than the passive planets. This additional inflow may cause entrainment in the gravitational spectrum that would result in an effective shadow area larger than the actual physical cross-sectional area. Occultation measurements with the sun and planets indicate refraction of light near the sun. This may be giving a false indication of its actual size. Some form of refraction may also be occurring in the inertial spectrum.

SURFACE GRAVITY vs DENSARE Table 2

PLANET	GRAVITY Earth=1 SA	GRAVITY Normalized*	DENSARE SA *2 ep14 tons per sq.mi.	DENSARE TL *2 ep14 tons per sq.mi.
Moon	0.165	0.22	--	0.22
Mercury	0.37	0.49	0.503	0.541
Mars	0.38	0.51	0.509	0.524
Venus	0.88	1.17	1.21	1.19
Earth	1	1.335	1.335	1.34
Uranus	1.17	1.56	1.56 *3	1.41
Neptune	1.18	1.58	1.52	1.56 *3
Saturn	1.15	1.53	1.44	1.52
Jupiter	2.64	3.52	3.53	3.6

* Gravity x 1.33, for comparison with DENSARE.
*2 TLTime Life; SA-Sci. American.
*3 Corrected values as discussed in text.

TOTAL SHIELDING PATH LENGTH

The position of the Earth and Venus on the densare curve, FIGURE 1, suggests that their projected shadows may consist of black centers with a gray circumference. The overall average value is made up of the black portion and the gray area. The black portion would have the limited densare pressure of 1.52X10exp.14 tons per square mile. The gray area would have an average value dependent on the width of the gray area.

Since Earth has an average densare of 1.335 X10 exp 14 tons per square mile, and the space maximum is 1.52_X10_exp_14 it is possible to calculate the area of the black shadow shielding for material of Earth's density. The black shadow path length for a given material is determined by the depth of matter the radiation must penetrate before its ability to produce gravitational force is expended. The black shadow path for Earth, LBS, was calculated to be 4,795 miles, assuming the Earth has a homogeneous density.

The calculations used to determine this path length are given in Appendix 1. FIGURE 2 presents the geometric relations between the calculated black shadow area, path length and the Earth's geometry. If one calculates the black shadow path for Venus, a different path length must be expected, unless Venus consists of the same material with the same compaction and density as that of Earth.

From the calculations the following table of EARTH SHADOW CHARACTERISTICS were determined, TABLE 3. The values listed are expected to vary somewhat from the actual, since an average homogeneous density was assumed. In this list mass shielding refers to the matter being shielded from the effects of gravitational forces between planetary bodies. Inertial mass shielding is treated in a later section of this paper.
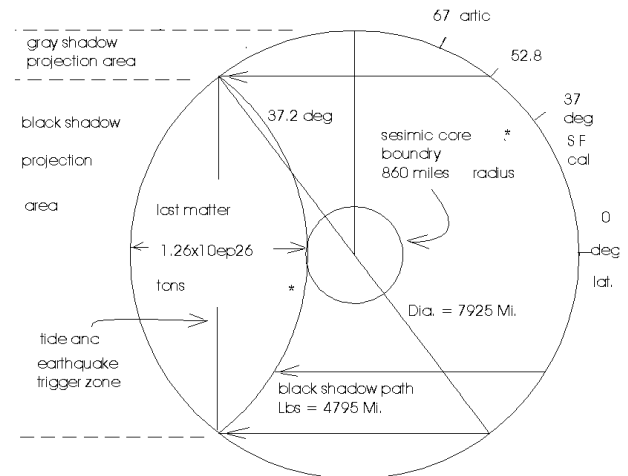
* black shadow boundry 827 mi radius calculated
  sesimic core boundry 860 mi radius measured

GRAVITATIONAL SHADOWING

Fig. 2

Earthquake activity may be more pronounced along the circular boundary of the black shadow area. The area and volume within the black shadow is subjected to a constant gravitational interaction with the Sun and Moon. The area and volume in the gray shadow area is subjected to a variable gravitational interaction. This model mechanically predicts that this moving boundary will be coincident with earthquake activity, the Earths tidal profile and tidal discontinuances. The history of quake activity data in relation to the known Sun and Moon positions should accurately plot the black shadow boundary as related to the solar system body. It is to be noted that a circular black shadow boundary exists on the surface facing the opposing solar system body and also on the opposite side of the Earth. Each of these circular boundaries should be a potential earthquake trigger zone. The polar areas are not exposed to these moving boundaries and are not subjected to the frequent earthquake triggers. The polar areas would still have crustal stress and earthquakes from plate movement but would not be exposed to the frequent trigger forces.

Seismic measurements within the earth indicate a refraction of sound waves at the boundary of what is normally called the inner core. This refraction is conventionally attributed to a core that is thought to be of a higher density than the surrounding material. It is of interest to note that this refraction boundary forms a surface that has essentially the same radius as the boundary between the totally shielded matter and the normal unshielded matter. The black shadow path calculations put this surface radius at 827 miles. The inner core measurements put the radius at 860 miles. This is only a four percent difference for this first time comparison. Therefore it is possible that the seismic measurements are actually indicating the boundary between the shielded and unshielded matter.

TABLE 3 EARTH SHADOW CHARACTERISTIC

Area of Projected Black Shadow, ABS

ABS = 0.634 x Proj. Area Earth, = 3.133 ep7 sq.mi.*

Area of Gray Shadow, AGS

AGS = 0.366 x Proj. Area Earth, = 1.8 ep7 sq. mi.

Path Length of Black Shadow, LBS

LBS = O.604 Dia. Earth, = 4795 miles

Volume Shielded by Black Shadow, V Lost

V Lost = 0.16 x Vol. Earth, = 4.17 ep10 cu. mi.

Actual Specific Gravity of Earth, Sga

Sga = 6.55

Norm Apparent Sp. Grav. of Earth, Sgn

Sgn = 5.5

Mass Actual of Total Matter, M act

M act = 7.84 ep21 tons

Mass (weight) Projected Earth, Me

Me = 83.9% M act, = 6.58 ep21 tons

Mass Shielded, M Lost

M Lost = 16.1% M act, = 1.26 ep21 tons

*** ep = 1 x 10^...**

TOPOGRAPHICAL GRAVITY VARIATION

An absence of topographical gravity variations on black shadow planets is a characteristic inherent in this theory. Small surface gravity variations would be expected on planets such as Earth, whose shadows are partially black and gray. Significant variations should appear on planets that are not large enough to shield all radiation and project no black shadow areas.

Mariner 9 tracking data shows that significant topographical gravity variations do occur on Mars. If Mars had an ocean there would be a two kilometer variation in sea level near the equator. J. Eberhart's work "A Matter of Gravity" reported in Sci. News , October 18, 1975 gives this data, and a map of the Mars gravity variations, FIGURE 3. The equipotential map shows the difference in sea level in kilometers that would exist if Mars was covered with water. The positive equipotential lines indicate sea level areas above normal due to high gravity. The negative equipotential lines indicate areas of weak gravity and low sea level. The two kilometer differential between the valley and peak of this imaginary sea on Mars is equal to 6,580 feet for comparison with our familiar local mountains. It is interesting to realize that one could not surf downhill on this 6,580 foot mountain of water.

Another predictable characteristic of this radiant shadow theory for gravity is symmetrical variations in gravity. If there is a path through a planet that results in dark or light shadowing, similar variations should appear at each end of the path. There are high gravity spots 180 degrees apart and low gravity spots 145 degrees apart on the Mars map. There is no explanation for this characteristic in the classical theory of gravity.

Since the Earth is not large enough to have a totally black shadow and the limited maximum gravity, some variations in sea level should be apparent. Any angular paths through the Earth that pass through lighter material should yield a lower sea level than the dark shadow areas. Since the majority of the shadow is black, variations in density should be muted. M. Parke, T. Dixon, and K. Hussey of JPL Labs report variations of 200 meters in the Earth's sea level. The data was obtained from NASA'S 1978 Seasat satellite. An equipotential map of the data is not yet available for this paper. Since this type of data is valuable for ballistic missile guidance, it probably will not appear in the literature. While the topographical gravity variations are interesting, a major revelation in this Earth data is that the variations are ten times smaller than those on Mars. A study of the JPL data should show that there are no matching topographical variations on opposite sides of Earth. The black shadow shielding masks any variations.

FIG. 3 Mars Topographical Gravity Map
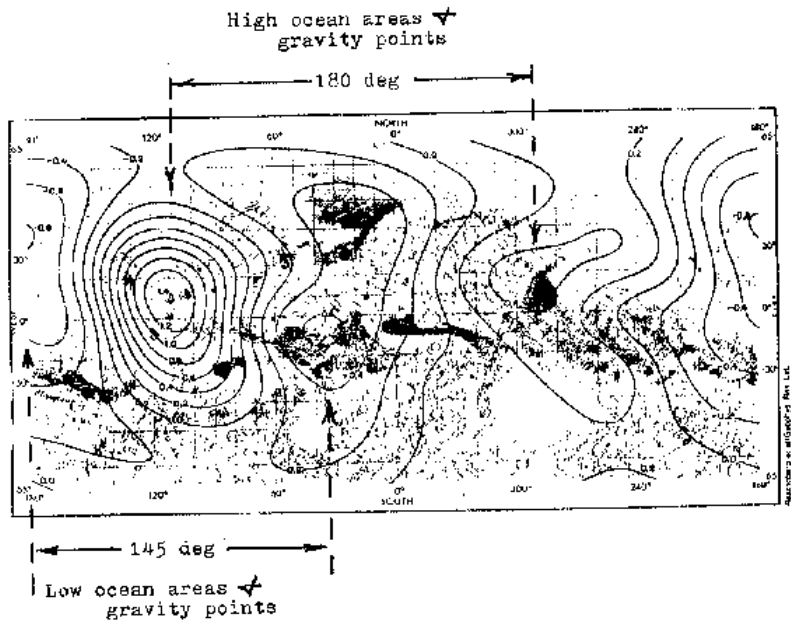
 If or when any satellite data becomes available for any of the large black shadow planets, it is expected that the gravitational variations would yet be smaller than those of Earths. If significant variations do exist on the ringed planets they should be reflected in the shape of the rings. The orbital tracking of the ring matter is the same as satellite tracking of the Mars variations.

TIDAL ACTION ANOMALY

There is an unexpected difference in the tidal effect of the Sun and Moon. During a solar eclipse it is obvious that the projected areas of the Moon and Sun are nearly identical when viewed from the Earth's surface. If the Moon and Sun had gravity shadows with the same average density (DENSARE), the static gravitational force from each would be equal, due to the projected areas being equal at the Earth's position. Since the DENSARE of the Sun is 169 times that of the Moon's, the Sun's tidal effect is expected to be 169 times that of the Moon's. For the readers accustomed to the 1/R squared gravity calculations, the resulting multiplier is 179 for the mass data used here. Contrary to this expectation the tide tables show that the tidal action of the Moon is significantly greater than the Sun's.

It appears that the greater amplitude of the Moon's tidal oscillation may be caused by the larger variation of the Moon's gravitational effect for each daily rotation of the Earth. When the distance from a point on the Earth's surface to the Moon is changed by one Earth diameter during each rotation, the Moon's projected area changes approximately 3 percent. A 3 percent change in area translates directly into a three percent variation in the Moon's gravitational force since it is Densare times area. When the same calculation is made for the Sun the change is essentially zero percent since the Sun is about 400 times further away. In any mechanical system a variable force is necessary to build and sustain an oscillation. In the classical gravity field theory this variation would be due to the gravity gradient and relative displacement with the Earth's rotation.

The black shadow feature of the Earth's radiant geometry provides a second variable force in the tidal system driven by the Sun and Moon. As the Earth's rotation takes a sea into and out of the black shadow shielding area, the sea is subjected to the maximum variation in force available in relation to the projected gravitational shadows of the Sun and Moon. The gray shadow fringe area of the Earth's shielding provides a gradual transition from the no-shielding area to the full shielding of the black shadow area. As a sea passes through the black shadow shielding area it is nearly completely shielded from the gravitational effects of the Sun or Moon on the opposing side.

SUMMARY OF EVIDENCE

The following characteristics are readily predicted by this radiant pressure model for gravity. Some have been shown to exist with this paper. Others should be seen with a minimum of investigative efforts.

I   Unbalanced force acting through a distance does exist in radiant space.

II   All objects fall at the same acceleration and speed.

III   Gravity or radiant pressure unbalance does increase in proportion to the amount of shielding with increasing planet diameter and density.

IV   Planet diameters do become large enough to stop all opposing flow through the planet.

V   Apparent planetary weight becomes proportional to cross sectional area when all opposing flow is stopped.

VI   A common surface gravity limit does exist for these black shadow planets.

VII   Matter shielding or apparent weight loss does occur for these black shadow planets.

VIII   Topographical "gravity" variations do exist on planets of less than black shadow size.

XI   Gravity variations are obscured on planets of black shadow size.

X   Gravity shadowing variations must show a form of directional symmetry.

The Planetary weight shielding and limited surface gravity phenomenon is held to be one independent proof of the radiant pressure concept of remote force. Thus, the previously unexplained attractive force acting through a distance between bodies is not an unknown inherent characteristic of matter but is the shadowing property of radiant space and matter.

INERTIAL RADIATION SPECTRA vs ENERGY

The source or cause of the prime inertial radiation is not considered in this model. In characterizing the features of the prime inertial radiation, it is important to note that it cannot be referred to as Electro Magnetic radiation or radiant energy, even though it may be potential energy.

It is well established that EM radiation is caused by the acceleration of electrons. In this model the electron exists as a deformation in the inertial radiation and in turn shadows the inertial radiation. Thus, the accelerating electron and its shadowing modulate the prime inertial radiation. This modulation of the inertial radiation is what we know as Electro Magnetic radiation. From the work of Fourier, any modulation is shown to be due to harmonics of the original frequencies. Thus, EM radiation can be seen as a feature of the prime inertial radiation, yet, the inertial radiation can not be called Electro Magnetic radiation. Since EM radiation is at the speed of light, the inertial radiation must also travel at the speed of light.

Disturbances in the inertial radiant flow such as fission, fusion and the electric arc, cause frequency conversions that result in emissions in the EM spectrum. Most of these emissions we equate to energy. Yet, there may be an equal amount of additional emission, such as ultra gamma, that we cannot detect or measure, and therefore are not considered energy because they do not exist in our spectrum of interests. It is expected that these undetected emissions are of a much shorter wave length than the known limits, and are not necessarily only electromagnetic radiation.

As previously noted in this paper the prime inertial radiation and shadowing interactions are viewed as the essence of matter and the mechanism causing all forces that appear to act through a distance. While remote forces are the main theme of this paper, it should also be noted that this same radiation system is also transmitting the non remote forces such as tension, compression, friction, pressure and impact, that are associated with matter's occupation of space.

The prime inertial spectrum of our existence is known to contain the following force subspectra:

PRIME INERTIAL

Gravitational   Inertial Nuclear Strong

ELECTROMAGNETIC

Electrostatic   Magnetic   Interatomic   Intermolecular

INERTIAL RADIATION SPECTRA vs ENERGY cont.

The minimum necessary characterstics of this inertial radiation are:

> Non-particulate radiation.
> Universally isotropic to all points.
> Remains isotropic with velocity.
> Radiates omnidirectional from all points in total space and matter.
> Has an infinite frequency spectrum.
> Radiates as photons, ie: modulated wave groups.
> Is not electromagnetic.
> Does not have mass or inertia.
> Exhibits self interference.
> Forms stable and unstable interference patterns.
> Propagates at the speed of light and leaves no empty space.
> Does not originate from matter.

With this inertial radiation model the radiation may be thought of as unbalanced or refracted near large bodies, as indicated by the solar occultation experiments, but space remains unwarped and retains its straight line three dimensional quality without regard to time, frequency or radiant flow.

With many individual spectrums available in an infinite frequency system, there may coexist many other creations of matter with vortices formed in other spectral flows that have no common interactions with our relative time domain, matter or frequency and energy spectrums .

WAVE MODEL OF MATTER

In this Wave model of Matter, all nuclear and sub-nuclear particles and electrons consist of deformations and resonant interference patterns such as vortices in the isotropic radiant flows of space. There is no mechanism to change radiant energy to matter or store radiant energy as matter. Solid particles as spinning bundles of EM and atomic energy stored in nuclei, independently existing in empty space, do not exist. Radiant energy is not absorbed or stored, only interference patterns change. All incident radiation must exit in some spectrum, instantaneously. The vortex has features similar to a prism, the emitted spectrum may be significantly different than the incident spectrum. The emitted spectrum is the mechanism that accounts for the forces of repulsion in this model. Due to frequency changes in the vortex, a particle may shadow and sink one spectrum and be a source in another particular spectrum.

A multitude of complex forms are possible for the stable and unstable deformations, interference patterns and vortices of radiant space. From experimental papers it appears that the outer shells of the neutrons and protons exist as layered concentric vortices. (1) Each concentric shell of the nucleon is considered a stable circular standing wave or a three dimensional whirlpool in its particular frequency of the spectral flow. Inner shells exist in high frequency radiation and outer shells in low frequency radiation, and the dimensions of the shells are proportional to multiples of 1/4 sections of the interacting wave length. (1) The literature indicates that complex substructures exist within the nucleus, such as quarks, but each substructure is viewed as a vortex in the inertial radiation.

In the classical models of matter there is no mechanism to account for the spin of all atoms and particles. With this radiant flow model the spin is a natural and obvious result of the particles existence. If there is no spin, there is no particle.

The photon is regarded as a linear disturbance in the inertial radiation. It can be described as an amplitude modulated wave packet with the amplitude varying from zero to maximum to zero. It obtains its amplitude variations from harmonious interference and modulation with its fellow and opposing and transverse photon travelers in the infinite frequency spectra of radiant space.

(1) Refer: The multi-ply spinning proton. SCI News, Vol.110, pg.58.

Solid particles are a concept of our macroscopic apparent reality that cannot be applied to the nuclear and subnuclear matter of this universal radiant pressure model. The phenomena of inertia, gravity, mass and occupation of space are not incomprehensible inherent characteristics of solid particulate matter, but are the interference interactions between adjacent flow disturbances which make up matter in the isotropic linear flows of radiant space. Gravitational acceleration results when the whirlpool is swept along in an unbalanced radiation flow in much the same manner as a whirlpool disturbance flows with a river.

The simplistic macroscopic view of this radiation model is that it consists of isotropic radiation, interference, and matter manifested as interference whirlpools. In reality there are multiple possibilities for complexity in the system. The system has multiple degrees of freedom with the following parameters;

RADIATION	INTERFERENCE
FREQUENCY	SHADOW DENSITY
PHASE SHIFT	SHADOW AREA
INTENSITY	SCATTERING
POLARIZATION	FOCUSING
COHERENCY	FREQUENCY CONVERSION
SPEED	

There may be many stable standing wave disturbance patterns and forms in the opposing flows that make up matter such as torus rings, flat spiral arm galaxies, strings, and concentric rings and spheres formed in a manner similar to our known optical interference systems such as holograms.

The disappearance of a particle such as an electron in one location and its appearance instantaneously at a remote location does not require speeds exceeding the speed of light when the particles are whirlpool disturbances in the sea of radiant flow. In liquid systems a new bubble may form in one location as an old bubble is absorbed at another location, yet the bubble did not move and the liquid system is still in equilibrium.

This system also solves the mystery of one polarized neutron passing through another in the atom smashing experiments. They are only two whirlpools temporarily dancing as one.

The classical wave theory of matter is not totally different than this cosmic radiant whirlpool model. In the classical wave theory, all elementary nuclear particles consist of circular or spherical EM energy waves independently stored and existing in empty space. In this model the spherical radiation waves that we call a particle are a whirlpool feature existing in the isotropic radiant flows of space.

THE ELECTRON The electron is not viewed as a particle or material point that orbits the nucleus. It again is a vortex shell of standing wave interference patterns produced by interference between opposing flows in frequencies of the electrons particular existence spectrum. The facts that electrons do not spiral into the nucleus, and some atoms share valence electrons, supports the shell model.

The mass spectrograph shows the electron has inertial mass, so it must exist in the inertial radiation spectrum, and it also interacts with the EM spectrum.

The shadowing around the nucleus attracts electron radiant shells per the 1/R squared system for shadowing and flow unbalance. Therefore, the classical equation for force between charges, F=(KQQ)/RXR, remains unchanged in this radiant pressure model for electrostatic forces. The dielectric shielding that can occur between charges may show similarities to the gravitational shielding.

There is some evidence in the literature that electrons decay to radiant energy. With the proper manipulation of shielding and focusing it may be possible to create electrons in and from the inertial radiant flow since particles are no more than stable disturbances. This may result in a source for electrons.

With this model of electrons there is no positive charge other than the absence of electrons. This suggests that an ambient level of electrons exists in matter in much the same manner as the ambient level of heat. This would predict an absolute zero for electrons, comparable to an absolute zero temperature for heat. This absolute zero for electrons would be the limited largest possible positive voltage obtainable. A zero voltage between objects only means they are both at the ambient level of charge or there is no differential charge.

In a resistor, the electron which exists in the inertial spectrum is accelerating and decelerating, resulting in disturbances of the inertial spectrum which are heat and light in the EM spectrum. Maxwell's equations and the Poynting vector clearly indicate that the energy manifested in the resistor is flowing from the EM space around the resistor into the resistor.

HEAT SHELLS

Heat is also modeled as interference patterns in the form of concentric vortex shells in a radiant flow . The major point of difference is that the thermal shells do not have rest mass and exist only in the radiant flows of the Electromagnetic spectrum. The minimum shell is large enough to encompass a complete molecule. The phenomenon of molar heat capacity directly indicates this form of model. The old Brownian theory of heat, with heat existing as energy stored in the kinetic energy of molecular motion, dictates that all specific heats should be proportional to mass. This heat shell theory predicts that the heat capacity should be directly proportional to the number of molecules. The Dulong and Petit law of 1819 shows the heat capacity of some metals to be directly proportional to the number of molecules. This could not occur if the Brownian kinetic theory of heat were valid.

Heat shells must surround the total molecule, as seen from the molar heat capacity. Super conduction takes place when a minimum of heat shells exist to interfere with the electron shells. Since heat is not molecular motion, it may have an upper temperature limit determined by the number of heat shells a substance may retain in relation to the wave lengths available in the heat spectra. This would be somewhat similar to the mass limit in the nucleus. There are only a given number of nucleons that a nucleus may retain and remain naturally stable.

ELECTRONS vs HEAT SHELLS

The following is a list comparing the features of the Electron shells and the Heat shells for this model.

Elec.   Electron flow represents energy.
Heat.   Heat flow represents energy.

Elec.   Metal conducts direct current flow slowly with effect near speed of light.
Heat.   Metal conducts heat flow with delay.

Elec.   Flows with ions.
Heat.   Flows with molecules in convection.

Elec.   Radiates from objects which are above ambient charge.
Heat.   Radiates from objects which are above ambient temperature.

Elec.   Exhibits an EM spectrum in the Xray range.
Heat.   Exhibits an EM spectrum in the infrared range.

Elec.   Insulators are effective.
Heat.   Insulators are effective.

Elec.   Shells surround the nucleus.
Heat.   Shells surround the molecule.

Elec.   Objects store charge.
Heat.   Objects store heat.

Elec.   An ambient level exists in matter.
Heat.   An ambient level exists in matter.

Elec.   An excess of shells is a high negative voltage.
Heat.   An excess of shells is a high temperature.

Elec.   Absolute zero represents absence of all electron shells (charge) and the largest available positive voltage.
Heat.   Absolute zero represents absence of all heat shells.

Elec.   The total number of electrons (shells) around an atoms nucleus is hear called ELECTROnic enTHALPY; ELECTROTHALPY.
Heat.   The total number of heat shells around a molecule represents the enthalpy.

Elec.   Compression of a crystal produces excess charge.
Heat.   Compression of a gas produces excess heat.

Elec.   Crystals change shape with added charge.
Heat.   Metals change shape with added heat.
Elec.   Flow through a resistance produces heat flow.
Heat.   Flow in a thermocouple produces electron flow.

| Elec. | Electron shells are stable when independent of other matter and exhibit inertia. |
| Heat. | Heat shells are not stable. |

| Elec. | The absolute zero for + voltage has "not" yet been researched, shown or measured. |
| Heat. | The absolute zero for temperature has been established. |

RADIOACTIVITY

Stable particles (points) emit, reflect and transmit radiation in a symmetrical fashion and have no unbalanced force from the radiant flows. Disturbance points (particles) with nonsymmetrical shadowing would accelerate through space with the flows.

Radioactive emission results when vortices (nuclear particles) have relative movement within the nucleus and the shadowing changes to more stable patterns. Unbalanced disturbances or ripples are given off that flow with the ever present isotropic radiant flow. The immediate motion of the particles with the isotropic flows gives rise to the apparent energy release and energy frequency transformations. The particles with no rest mass are only ripples. The multitude of subnuclear particles derived from atom smashing are no doubt similar to the many eddies, ripples and waves one would obtain by destroying a water whirlpool with a bullet.

GRAVITATIONAL SHIELDING IN THE NUCLEUS

Without shielding we would expect an atom's weight to equal the sum of its parts. It is established that the atomic weight of an atom is actually less than the sum of the weights of the protons, neutrons and electrons. A helium atom is 99.29% of the weight of its individual parts, which are essentially four hydrogen atoms. This hidden mass is normally called the mass defect. Most of our work for harnessing fission and fusion energy is based on the assumption that atomic energy comes from a mass to energy conversion of the mass defect, where $E = M*C$ squared .

Any spherical object, such as a nucleus, made up of smaller round objects would be expected to be made up in a layered structure. When one builds a ball out of homogeneous marbles, this characteristic is evident. Within the nucleus, if the mass loss per added nucleon stays constant for a given layer, and changes to a different value for the next layer, this would indicate that the mass loss is due to shielding. Thus attributing atomic energy to the mass loss and a mass to energy conversion as in $E = M * C$ squared is not available in this model.

In order to demonstrate the periodic change in shadowing as the layers of the nucleus are added, the actual mass loss of each added particle as a percentage of its own actual mass is plotted with the mass number on the X axis. The table of isotopes in the CRC handbook of Chemistry and Physics provides atomic weight data to calculate the actual measured mass in grams of each isotope. When one adds one nucleon to a nucleus, the resulting isotope will also have a measured mass available in the data table. The difference between the two measurements represents the mass added due to the added nucleon. This measured added mass is always less than the known actual mass of the isolated nucleon. When the measured added mass is divided by the nucleon mass it is found that only 99 percent plus is accounted for and that about one percent of the actual nucleon mass has been shielded. When this small percentage of mass lost by the individual added nucleon is plotted vs the mass number, distinct evidence of layering is seen. (refer to FIGURE 4, STEPPED MASS LOSS GRAPH). It shows that the percentage of each nucleon mass loss remains constant for each group of mass numbers, which represent a layer.

It should be noted that shielding and shadowing is a mutual phenomenon. One half of any added mass loss occurs for the added particle and one half resides with the nucleus. For nuclei of 2, 3 and 4 particles this feature has a large effect on the shielding data. For a two-particle nuclei the total mass loss is not just with the second particle. The STEPPED MASS LOSS GRAPH, FIGURE 4 is derived with a spreadsheet program and does not take the mutual shielding into account.

FIGURE 4 STEPPED MASS LOSS GRAPH
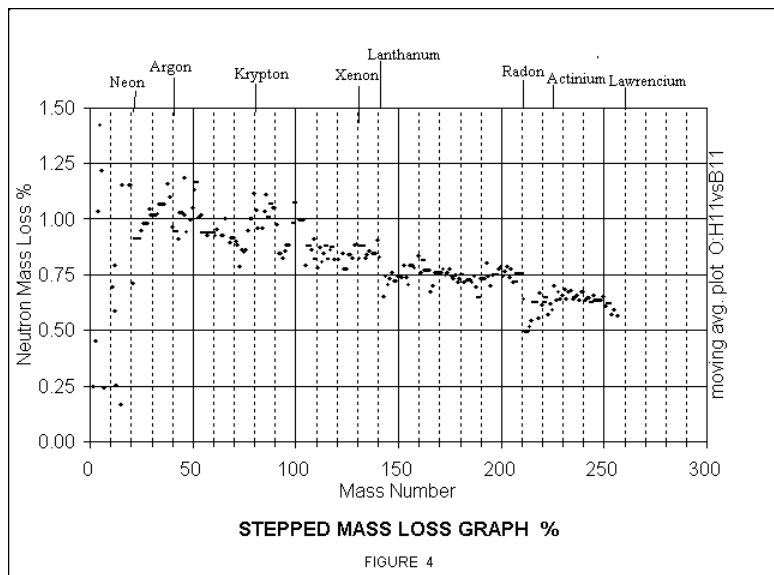
STEPPED MASS LOSS GRAPH %

FIGURE 4

As the nucleus increases in mass number and steps to the next radius, the percentage of loss steps to a different constant value for this new layer. It is shown on the graph how the steps and groups in this stepped mass loss graph coincide with the known steps and groups in the periodic table of the elements. Most of the layer changes take place coincident with the INERT gas positions on the periodic table. Two major layer changes coincide with the rare earth series, Lanthanides and Actinides. It seems apparent that shielding is the mechanism that limits the size available for stable nuclei. Shielding from the nuclei deprives the added particle of the flow necessary for its very existence.

This characteristic of layering and shadowing changes is logically predicted by a radiant flow and shadowing theory of remote forces. It was expected, it was searched for, and it is clearly evident in the existing data.

SHIELDING vs MASS CONVERSION

There is a classical average mass loss curve common in most general physics books that must not be confused with the above described curve. The ordinate of the average mass defect curve is obtained by taking the total mass loss of the isotope and dividing that by the total number of nucleons. This results in an average mass loss for all nucleons of the isotope and will not demonstrate the mass loss of the individual nucleon of a particular layer. This classical average is plotted as a function of the mass number, N on the X axis. This is then called by various terms such as "binding energy" per nucleon or "packing fraction" or "mass defect".

No reason can be seen to relate shielded mass to the amount of atomic energy available from a nuclear reaction. When a proton or neutron is separated from a nucleus the " lost mass ", shielded mass will again be manifested, when it is no longer shielded by the other nucleons. The energy exhibited in an atomic reaction existed in that point of radiant space before the reaction and will again be available after the reaction. The atomic energy does not come from the shielded mass conversion. The fission of the nucleus only provides the disturbance that allows the radiant sea of space to manifest a small portion of its unlimited power. Mass and inertia are features of the radiant flow and not features of the particle.

In this model, nucleons consist of multi-layered vortices in sub-spectrums of the radiant flow of space. Any disturbance or separation of whirlpools or established flows would be expected to cause modulations and ripples in the radiant flows of space. The resulting modulations and ripples which occur in frequencies of our sub-spectrums of material existence are called energy and called particles with no rest mass. In other sub-spectrums of the isotropic radiant sea of space our energy would have no effect or may be considered noise. It is considered energy in our spectral domain of existence only because it is the proper wavelength to interact with the multi-layered whirlpools which constitute our matter.

The conventional model of "binding energy" is described in a manner similar to conventional gravitational theory, every one of the nucleons has an inherent attraction to every other nucleon, with no cause or physical systems model described. If this assumption were true there could be no layering in the stepped mass loss per nucleon curve. Since the attraction supposedly is to every other nucleon the loss would have to be directly proportional to the number of nucleons. There would be no steps and constant sections in the stepped mass loss per added nucleon curve.

In the conventional model of the nucleus the lost mass is somehow converted to and stored as binding energy. In the case of fission, uranium with a large nucleus has less binding energy per nucleon than its smaller fission products. When fission takes place the mass decreases because more "binding energy" is required for the products, yet, the mass also decreases because mass must be "converted to energy" to account for the atomic energy release. In the case of fusion, two smaller nuclei are combined to form a larger nucleus which requires more "binding energy" per nucleon and less mass. The mass loss again is required to furnish the added binding energy and the converted energy for the explosion. Can one have two explanations for the one phenomenon ?

The shadowing feature of this model provides a single explanation and removes the necessity to view a nuclear reaction as a mass to energy conversion. The mass that appears to be lost in a nuclear reaction was only shielded and is measurable again when the nuclear particles are separated. The energy exhibited in the process existed in the isotropic radiant flows as potential energy at that point in space before the reaction and is still available there after the process. The energy of the Sun is not derived from burning expendable mass. The solar process, whether nuclear or not, is converting the unexpendable inertial radiation of space to spectrums that are called energy for our spectral domain of interest.

If one could measure and prove that mass was annihilated and that the lost mass was proportional to the released energy, this would still not prove that mass was converted to energy.

Viewing the release of energy in the conventional model, as being due to a mass to energy conversion leads to the comforting belief that a nuclear conflagration will cease when the uranium fuel is used up. This belief was necessary before taking the risk of igniting the first atomic explosion.

It is expected that this shielding of the strong force, inertial force and mass on the nuclear scale is of a different nature than the macroscopic planetary gravitational shielding. The particles may be sharing the same radiant flow streams and interference patterns in much the same manner as the natural phenomenon of vortex shedding patterns in fluid flow systems. The overlapping black shadows result only in apparent mass loss. There may be some tests that compare this gravitational mass loss with the inertial mass loss for this mass defect shielding. Shielding may be the limiting factor that determines the largest size available for stable nuclei. Total shielding by larger nuclei would deprive any added particle of the flow necessary for its existence.

In this model the apparent mass still changes and energy is exhibited but that is not proof that a mass to energy conversion took place. The chain reaction of fission or fusion does not need to be explained as the result of a mass to energy conversion any more than the chain reaction of burning does. If our exceedingly expensive fusion and laser fusion programs still view the " mass to energy convers ion " as the only possible source of the energy, actual processes for interacting with the potential energy of radiant space may never be exposed.

The radiant flows of space are the substance of the nuclei and are the prime cause of the effects we call energy. There is no mass defect. The mass is only temporarily shadowed from the flow and is not converted at all. Thus atomic energy is not atomic at all, it is just a temporary disturbance in the radiant flow of space. Every particle within our known universe and sub spectra of existence could decay to nothing and the radiant flow of space would still exist.

INERTIA

As in the quantum theory, interaction of radiation with matter takes place in discreet quanta or photons, with an all or none characteristic. As an atom is interacting with its characteristic existence spectrum, it interacts with a discreet photon or given number of waves. The frequency of the beginning portion of the interacting photon wave train is determined by the characteristic existence "absorption" spectrum of the particle. Since the photon is a series of waves, a given time interval is required for the complete interaction. If the atom is accelerating toward the radiant source, the Doppler effect will cause a relative frequency and flow increase during the photon absorption time interval.

A resultant radiant flow increase will occur. A proportionate decrease will occur in the trailing direction. Thus, an unbalanced radiant flow would result in a retarding force proportional to acceleration, F=MA. After the interaction with one photon wave packet is terminated, the particle reverts to its original characteristic " absorption " frequency for interaction with the initial section of the next photon. This continuous sawtooth relative frequency variation and resultant radiant flow unbalance gives the force of inertia during acceleration. It can be seen that a Doppler shift does not occur for constant velocity during absorption time but only for acceleration.

It should be noted the intermittent radiant flow, inherent in a photon system of radiation, is an absolute necessity for the operation of this Doppler model of inertial force. The ending of one photon allows the particle to switch to a photon train of a different frequency as required by the different speed and yet retain its original characteristic absorption frequency.

The question of why a shadowed unbalanced radiant flow causes an object to fall toward a planet cannot be explained by saying that photons or quanta of radiation have inertia and impart momentum to the particle. If all inertia is caused by the primary radiant flow, the radiant flow itself cannot have inertia. With this systems model the particle of matter, as a whirlpool, is a feature of the radiant flows. Thus, the falling of a particle in an unbalanced flow does not require momentum from the flow. The only primary necessity for this model of reality is the existence of non-particulate radiation. The model has removed the necessity to have mathematical imaginary lines of force and force "fields", and or graviton and gluon particles shuttling between bodies toting bundles of attractive force. The question of equivalence between gravitational and inertial force is also removed. Each is a distinct and separate feature of this radiation and shadowing model.

As noted previously, radiant energy that appears to be absorbed is not stored as an independent bundle of EM energy in a particle. The interacting process that appears to be absorption is only frequency conversion and changing of the interference patterns. An infinite source of energy is available at every point in space whether an atomic particle is there or not.

From prior presentations it seems apparent that the gravitational mass of planets and atomic nuclei is subject to shielding. The effect of shielding on inertial mass has not been directly discussed. A short study of the planetary orbital force balances, gravitational versus inertial, directly indicates that inertial mass must also be shielded. If inertial shielding did not occur in proportion to the gravitational shielding, the large shadowed planets would exhibit longer orbital periods than that which would agree with the known orbital radius and mass.

The gravitational mass of the sun is determined by the period and radius of the planets orbits. Each planet's orbital period and orbital radius should indicate the same gravitational mass for the Sun. If inertial shielding did not occur, the small non-shadowed planets would indicate one value for the Sun's mass and the large black shadow planets would indicate other values. To maintain orbit about the Sun the mutual gravitational force must equal the planet's inertial centrifugal force:

$$\text{EQ.11} \quad (G\ M_{sg}\ M_{pg})/R_t R_t = (M_{pi}\ V_p V_p) /R_c$$

Where: G = Gravitational Constant
M_{sg} = Mass of Sun (gravitational)
M_{pg} = Mass of Planet (gravitational)
R_t = Distance between mass centers
M_{pi} = Mass of Planet (inertial)
V_p = Velocity of Planet
R_c = Planet's distance from center of rotation

From EQ. 11, the mass of the Sun can be determined if the planet's velocity and radius are known.

$$\text{EQ.11b} \quad M_{sg} = (V_p V_p R)/G$$

Equation 11b is obtained by:

1. Assuming R_c is equal to R_t due to the extreme relative size of the Sun, and

2. Assuming the gravitational mass of the planet, M_{pg}, is equal to the inertial mass, M_{pi}.

If the gravitational mass and the inertial mass were not equally shielded, various values would be obtained for the Sun's mass. Since all planet orbit parameters, velocity and radius, yield the same value for the Sun's mass, inertial shielding must be proportional to any gravitational shielding that may exist for our planet sizes.

The characteristic that has been called mass in the classical equations and theories for gravity and inertia is actually the apparent mass. The actual amount of matter in a body will only be known if there is no shielding or the degree of shielding is known.

Thus, when the moons of a black shadow planet are shielded from the sun's gravitational affect by the black shadow of the planet, a perturbation of the orbit should not occur. The inertial force is proportionately decreased in that same direction.

The reported perturbations of a pendulums periods during solar eclipses indicate the black shadow does make a measurable change in gravity and inertia, but it is not readily evident how the period change is accomplished. Ref. Saxl, Erwin J. and Allen, Mildred. 1970 Solar Eclipse as seen by Torsion Pendulum, Physical Review D 3:3:823-825, 1971.

It is expected that the moon is not completely shielded from the sun's gravitational effect during an eclipse, since the effective gravitational shadow of the planet Earth would be increased in density as seen from the moon during the alignment. Future work to define and measure the perturbations may be possible by using the following systems :

Instantaneous orbital ranging measurements of the moon and artificial satellites before and during an eclipse,

Use of side scan radar or photography from planes or satellites to track and record ocean surface perturbations in the path of the shadow.

The GPS Satellite system could be used to detect earth crust and ocean perturbations in the path of the full eclipse.

Laser ranging on the Earth's surface to detect crustal deformations in the umbra area of the eclipse shadow.

MOTION

Particles at rest have no unbalanced force due to radiant flow, but are interacting symmetrically with the isotropic flows of their particular "existence spectrum". Particles in uniform linear motion also have no unbalanced force. The relevant spectrum remains isotropic with speed due to Doppler shift. For this reason, the state of rest cannot be determined in relation to the total isotropic radiant space and linear motion can only be determined as in relation to another object. A wide or infinite frequency spectrum is necessary to allow adequate range for Doppler shifts with motion.

Since light is a modulation of the inertial radiation it cannot have a speed different than the inertial radiation. there is no free space where light can take on any speed dictated by the speed of its emitter. The constituent matter of the emitter and the light exist as disturbances in the inertial radiation and therefore neither can exceed the speed of the inertial radiation. The red shift that science currently attributes to Doppler shift and an expanding universe will require reconsideration in this model. There is no known reason that suggests the presently detectable upper EM frequencies define an upper limit to the cosmic radiant frequencies. If the highest EM frequencies now detectable were an upper limit, an anisotropy should be detectable between the forward and trailing direction of our earth's motion in the universe. The ability to detect and measure the expanded inertial spectrum predicted by this model will be necessary for control and utilization. X-rays did not exist until an accidental discovery.

MAGNETISM AS RADIANT WHIRLPOOLS Magnetism in space can be seen as an unstable or soft form of matter. The magnetic line is described as an elongated vortex disturbance in the radiant space. It emanates from the aligned whirlpool atoms of magnetic matter. In magnetized material many of the nuclear and electron whirlpools are aligned. This causes mutually reinforced helical disturbances in the radiant system of those frequencies. Reverting to a ray description of radiant flow, the ray impinges tangentially with the equator of the whirlpool vortex and exits in a right hand helical pattern toward the atom's one pole and a left hand helix toward the other pole. Higher frequency helixes would again be concentric and inside the lower frequency ones, and not necessarily in the same direction of spin. This spatial model conforms with the observed paths of electron and proton movement in a magnetic field. Thus, two right hand helixes repel each other when flowing from opposing poles since they have an opposite direction of spin. A left and a right hand helix merge and attract when facing since their direction of spin is then complementary.

In fluid flow system, whirlpools and vortices are an impedance matching phenomenon, where change from low to high velocity flows occurs and a directional change from lateral to axial rotational flow results. In the radiant flow systems of this model, whirlpools again are a phenomenon where lateral flow is transposed to axial flow as a spiral vortex that we call the magnetic line.

The Magnetic vortex has many characteristics comparable to matter as shown in this list:

MATTER	MAGNETISM
Occupies space	Repels like poles and some materials.
Interatomic binding	Attracts opposite poles and magnetic materials.
Inertia	Inductance
Spin	Spiral form
Weight	??
Captures electrons	Captures electrons in Spiral
Changes polarization of light.	Changes polarization of light via the Faraday effect.
Causes frequency dispersion via a prism.	Causes Zeeman effect splitting of spectral lines.

NATURAL INTERACTION

The radiant pressure model suggests that the isotropic radiant energy flows may be focused, diverted or transformed in frequency with existing electrical and mechanical technology to utilize the forces called gravity and inertia. Presently, only passive methods are in use to interact with the forces. Once one visualizes the radiant pressure model as a possible cause for the forces at a distance, various experimental methods for focusing and shielding the forces become self evident.

We have become so accustomed to the classical theories that the following interaction descriptions may prove difficult to visualize.

Weight: When lifting an object you are not feeling an unknown force field between the earth and the object. The earth has interacted with the space by shielding and the space is singularly responsible for the force you feel. It is important to view the process this way to begin to realize the power density in every cubic inch of space. Once we are able to focus this flow, it will not only be possible to counteract gravity on an object, but it will also be possible to magnify the effect. The force you feel when lifting is the unbalanced flow of space. The weight is not in the object.

Inertia: When one holds a spinning gyroscope and feels the resistance to angular motion there can only be one answer; radiant space is supplying the force. If a stone could be shielded from the inertial flow it would glance off a glass mirror like a light beam. The Inertial radiant flow of space is interacting on the stone. The mass is not in the stone.

Electrical Induction: The mechanical force and multimegawatts of power within a transformer and motor are not transferred from the winding to the iron and copper but from the winding to space and from space to the iron and secondary windings.

Magnetic Attraction: When a strong magnet is held very near an iron object it is always said that the magnet is pulling on the iron. In order to visualize this model it is critical to understand that the magnet is not pulling on the iron and the iron is not pulling on the magnet . They are each interacting with radiant space and space alone is touching and acting on the objects. From the 1/R squared feature of this force it is clear that it is due to radiation and shadowing. Yet there is no known EM radiant frequency associated with a static magnet. This is another clear example of the inertial radiant flow density in space.

ARTIFICIAL INTERACTION

The electric arc is a good example of frequency transformation. From the mass spectrograph, we know the electron and ions interact with the EM and inertial spectrums simultaneously. Within the arc, the disturbances or modulations of the inertial spectrum are manifested as heat, light, ultraviolet, and X ray frequencies following the Fourier analysis. The energy we see manifested in the electric arc is coming from the space around the arc. The electric energy we are supplying is only establishing the conditions for the transformation. Ball lightning is comparable to the electric arc, where radiant space has supplied its own conditions for the manifested energy spectra transformations.

When artificial unbalance of the gravitational radiant flows occur, physical movements now considered impossible become commonplace. An object within the unbalanced flow is essentially falling with the flow. Instantaneous velocity changes can occur with no inertial forces evident. An object capable of focusing this radiant flow would not encounter atmospheric friction. A column of air would be falling in the same direction and speed with the object. Thus, no atmospheric heating or sound would result. The distance, speed and acceleration of the object would have little relation to any energy expenditures.

The mathematical models and the current gravitational theories have yet to lead to any known significant projects, financial support, plans or results for controlling interaction with gravity or inertia. This radiant pressure model is visualizable, and contains many features inviting continued research, thus allowing many participants to make predictions and devise tests that may lead to interaction or improvements of the model.

When this model of matter and force is visualized as a total system, the radiant flow of space becomes substance and everything we call matter is only deformation and shadow in the radiant flow. The simplicity of a shadowing system is so pronounced that it becomes one of the defining characteristics. It seems to be proving the quotation "The last thing a deep sea fish will ever discover is water". We are existing and swimming in this deep sea of radiant flow and have failed to recognize its existence.

Artificial interaction should be possible by diversion of the balanced flows to cause an effective unbalance. An object on the Earth's surface has a balanced flow from all sides and an unbalanced flow from top to bottom due to the Earth's shielding from below. If the balanced flows from the sides could be diverted to axial flow as in a vortex it may then be possible to modify this focused axial flow in order to balance the normal gravitational unbalance.

The following is a list of the obvious methods available to interact with the radiant flows of space. Some combination of these methods of interaction should provide a path to obtain focus and control of the isotropic radiant flow of space.

Inertial
> Flywheel
> Mechanical Resonance
> Vibration

Electrostatic charges

Magnetism

Electromagnetic Radiation
> Standing Waves with antennas and Space

Pizioelectric Crystals
> Interact with the Inertial and the EM forces

A spinning flywheel and vibration are two methods to obtain strong interaction with the inertial radiant spectrum. An ionized plasma is a method to interact with the inertial and EM spectra. Extreme charges, magnetism and microwaves are available to provide shielding interaction in the EM spectrum.

The impedance of space, 277 ohms, suggests another avenue available for artificial interaction via radio energy. There is evidence that a plasma resonance will produce radio frequency energy in the EM spectrum that apparently is derived from the Inertial spectrum.

From the available methods for combining forces to control interaction it would seem most promising to begin experimenting with the forces of inertia and magnetism. They both exist in the inertial radiant spectrum and have a strong force flow available that can be readily modified. One obvious approach would be to try unbalanceing a magnet or electromagnet with the extreme forces available with flywheel shielding. Early attempts at unbalanceing an electromagnet by applying 300 KV DC to shielding did not produce any favorable results.

APPENDIX A1-A7

***601Planet Parameters (1) Table 4 A1

Planet	Diameter Mean Miles	Mass Tons	Escape Velocity Miles/Sec.
Moon	2.16K	81ep18*	1.5
Mercury	2.91K	360ep18	2.6
Mars	4.14K	705ep18	3.1
Venus	7.58K	5.36ep21	6.4
Earth	7.91K	6.59ep21	7.0
Neptune	27.8K**	116ep21	15.1
Uranus	29.5K	96ep21	13.6
Saturn	72.3K	625ep21	22.0
Jupiter	86.6K	2.09ep24	37.5
Sun	865K	2.2ep27	383

* K is 1X10^3, ep is 1X10^...
** Assumed wrong per discussion in text.
(1) "Reference" list item 5) D. Bergamini ...

***602Planet Parameters (2) Table 5 A2

Planet	Diameter Km	Mass Earth=1	Surface Gravity Earth=1
Moon	---	---	---
Mercury	4,880	0.055	0.37
Mars	6,787	0.108	0.38
Venus	12,104	0.815	0.88
Earth	12,756	1	1
Neptune	49,500	17.2	1.18
Uranus	51,800*	14.6	1.17
Saturn	120,000	95.2	1.15
Jupiter	142,800	317.9	2.64
Sun	NA	NA	NA

* Changed per discussion in text.
(2) " Reference" list entry 4) J. D. Goguens and C. Sagen

Base line data: Earth diameter is 7926 miles, Earth density is 5.5, water is 1.

Calculations: Black Shadow Path Length A3

The DENSARE pressure, or unbalanced flow, existing for a given point on a volume of matter is directly proportional to the shadowing from below, which in turn is proportional to the path length through the volume in the direction of interest. Thus, the DENSARE is proportional to the volume's path length until the maximum densare pressure is reached.

The known value of the black shadow densare is the space maximum of 1.52 X10exp14 tons per square mile for passive shielding as taken from the plateau on the densare curve.

The length of the black shadow path necessary to achieve maximum pressure can be found from the geometry of the Earth once the projected black shadow area is known. The ratio of the projected black shadow area to the gray area can be determined when the average densare pressure for the gray section is found. The value of the gray shadow densare and the corresponding path length is a function of the gray section volume and projected area.

The simultaneous solution of the area ratio equation and the average gray shadow equation yields the value for the depth of Earth material required to completely shield the radiant flow of the gravitational spectrum.

This depth of Earth material is called the minimum black shadow path length.

The laborious trigonometry solution presented here should be easily replaceable by a few calculus equations.

***701Definitions A4

Dbs = Densare of black shadow area.

" = 1.52 X 10^14 tons per square mile.

Abs = Area black shadow projection.

avg Dgs = Average Densare gray shadow.

Ags = Area gray shadow projection.

Lbs = Length of black shadow path.

avg Lgs = Average length of gray shadow path

de = Diameter Earth

Ae = Area Earth projection or cross section

We = Weight of Earth apparent.

avg De = Average densare of Earth.

" " = We/Ae

" " = 1.335 X10^14 tons per square mile.

Q = Angle with sin of Lbs/de, = UNKNOWN degrees.

K = (avg De)/Dbs , = 1.335 X 10^14/1.52 X 10^14

K = 0.878 ratio

R = Radius of Earth

DENSARE = Unbalanced radiant pressure due to shadowing.

" = units of tons per square mile

APPENDIX A5

The total projected force unbalance or apparent weight of the Earth equals; the black shadow area times the space maximum densare pressure of 1.52×10^{14} tons per square mile, plus the product of the gray shadow area times its average densare pressure.

Eq# 1 Dbs Abs + avg Dgs Ags = We of Earth

Refer to figure 2 and the definition for the parameter descriptions. The average densare of the gray shadow area, avg Dgs, is proportional to its corresponding average path length in the same ratio as the black shadow densare is proportional to its corresponding minimum path length.

Eq# 2 avg Lgs/ avg Dgs = Lbs/ Dbs

From figure 2 the angle Q is seen to be , jumping to equation,

Eq# 10 Q = angle with sin of LBs/ De

The area of the black shadow is,

Eq# 11 Abs = Ae cos^2 Q

The area of the gray shadow is,

Eq# 12 Ags = Ae sin^2 Q

Equation 1 now becomes,

Eq# 1a DbsAe cos^2 Q + avg DgsAe sin^2 Q = We

The total weight of the Earth is equal to the average densare De times the total projected area.

Eq# 13 We = avg DeAe

Substituting this into Eq 1a and dividing by Ae gives

Eq# 1b Dbs cos^2 Q + avg Dgs sin^2 Q = avg De

Eq# 1c cos^2 Q + sin^2 Q X Dgs/Dbs = De/Dbs

From the list of definitions:

avg De = 1.335 X 10^14 tons per sq. mile

Dbs = 1.52 X 10^14 tons per sq. mile

From Eq# 2 avg Dgs/Dbs = avg Lgs/Lbs

Substituting these into Eq 1c gives,

Eq# 1d cos^2 Q + sin^2 Q Lgs/Lbs = 0.878

The average length of the gray shadow path, Lgs, is found by dividing the volume of the gray shadow matter, Vgs , by the projected gray shadow area, Ags.

Eq# 3 avg Lgs = Vgs/ Ags

From the geometry of a sphere the gray shadow volume is,

Eq# 13 Vgs =(4/3) Pi R^3 sin^3 Q

From   Eq# 12 Ags = Ae sin^2 Q

Eq# 12a Ags = Pi R^2 sin^2 Q

Combining Eq# 13 and Eq# 12a in Eq# 3 gives,

Eq# 3a avg Lgs = (4/3)R sin Q

From figure 2 and Eq# 10.

Eq# 10a Lbs = 2R sin Q

The ratio of the average gray shadow path length, Lgs, to the black shadow path length, Lbs , is,

Eq# 2a avg Lgs/ Lbs = 2/3

Returning to Eq# 1c we can now solve for Q.

Eq# 1c cos^2 Qo + sin^2 Qo (2/3) = 0.878

From the trigonometric identity, cos^2 Q = 1 sin^2 Q

Eq# 1d (1 sin^2 Q) + (2/3) sin^2 Q = 0.878

Eq# 1e sin Q = 0.642

Eq# 1d Q = 37.2 degrees

With this angle now known it is possible to calculate the Earth's Shadow Characteristics listed in the Total shielding path length section of this paper, Table 3.

References

1) T. Henry Moray, The Sea of Energy, 5th Edition

2) V. V. Radzryevskiy and I. I. Kagalnikova, The Nature of Gravitation 1960 FTD-TT-64-323 USAF

3) N. Schein, Dk. M. Haskin and R. G. Glasser, Phys. Rev. 95 855 1954.

4) J. D. Goguens and C.Sagen., The Solar System Scientific American, Sept. 1975

5) D. Bergamini, The Universe. Time Inc. 1962

6) The Multi-Ply-Spinning Proton, Science News, Vol. 110, pg. 58.

7) Erwin J. Saxl and Mildred Allen. Solar Eclipse as Seen by Torsion Pendulum, Physical Review D 3:3:823-825, 1971

8) J. Eberhart, A Matter of Gravity, Sci. News, Oct 18, 1975

9) W. R. Beam, Microwave Applications. Handbook of Semiconductor Electronics, 2nd Edition, McGraw Hill.

http://home.netcom.com/~sbyers11/grav11.htm#101