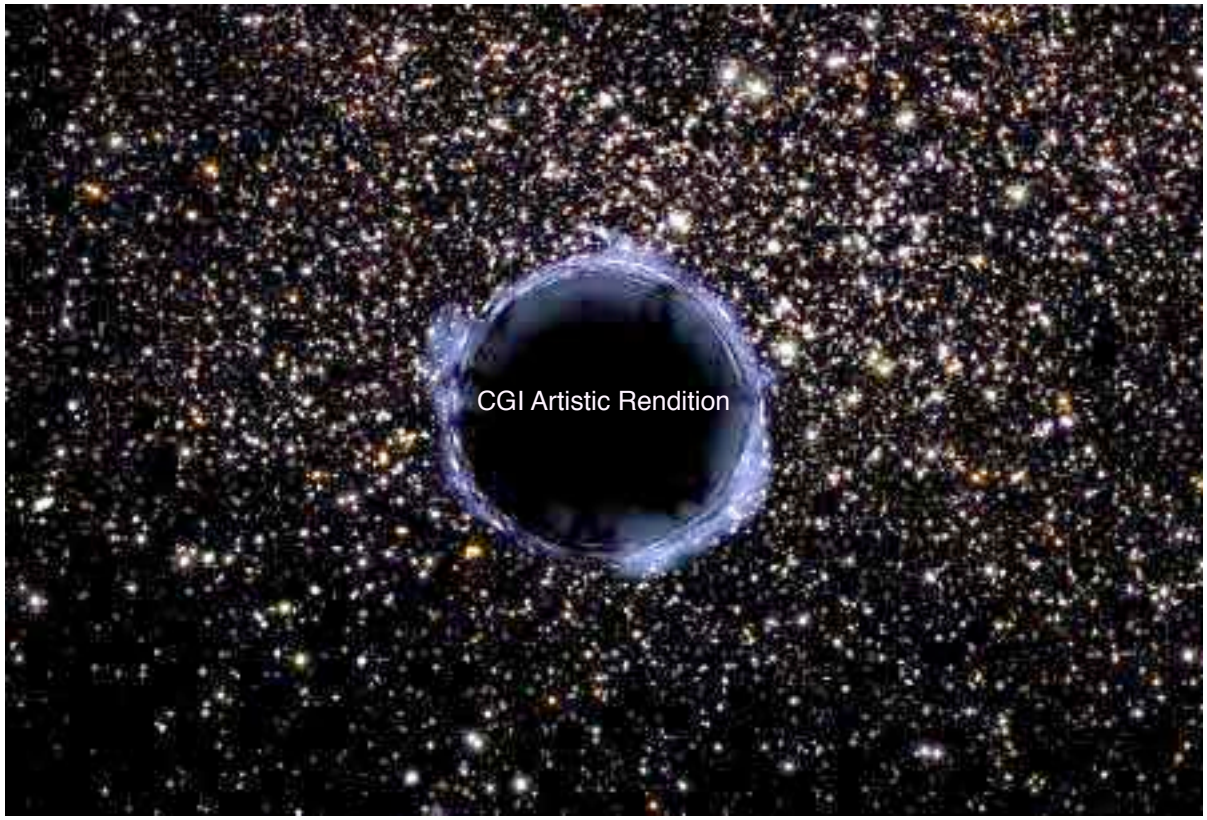


A Black Hole as An Open Energy System

Our concept of black holes has changed in the past few years since black holes haven't been acting exactly as consensus science believed they should. Originally, they were defined as:
".. an object with such powerful gravity that nothing can escape from it, including light. The black hole's mass is concentrated in a point of almost infinite density called a singularity. At the singularity itself, gravity is almost infinitely strong, so it crushes normal space-time out of existence. "[1]

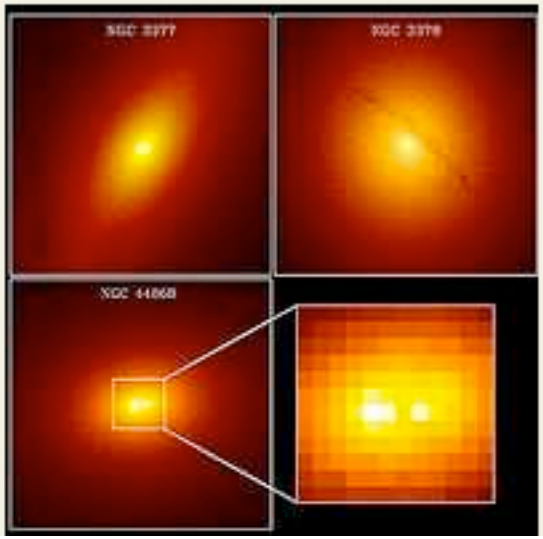
[1] http://blackholes.stardate.org/resources/faqs/faq.php?p=what-is-a-black-hole

This concept of a black hole as a "singularity point" emerged out of "The Big Bang" theory and is not directly descriptive of the way the phenomenon had been actually observed.

The Original Observational Data

The existence of black holes have been observationally inferred and then converted to the consensus "singularity point" theory. In 1997, Astrophysicist Koji Mukai of The Goddard Space Center explained that black holes were initially inferred from telescopic data[2] :

Image: Massive Black Holes in Galaxies NGC 3377, NGC 3379 and NGC 4486b



"There are no 'real' pictures of a black hole. This is because black holes themselves do not emit or reflect any light (that's why they are called black holes), and they are too small and too far away to be imaged. There are images of binary star systems consisting of one normal star and one black hole, and of the central regions of Galaxies that are believed to contain black holes. [Here] are some examples of the latter, taken with the Hubble Space Telescope....."

Astronomers had to infer that the point-like reduction of light intensities in galaxy centers, as shown in the bottom right panel above, represented black-hole blockage of light.

Black holes were inferred from observations of binary stars in motion around invisible partners and small but detectable reductions of light intensity from the centers of some galaxies. Black holes were thus identified as gravity centers which

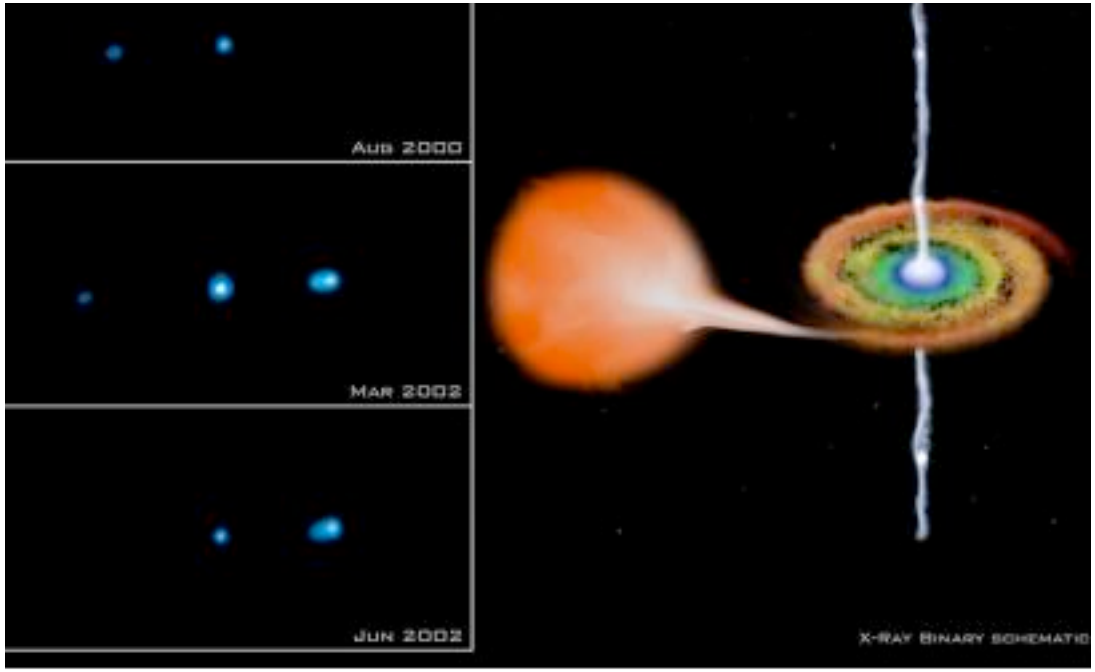
[2] http://imagine.gsfc.nasa.gov/docs/ask_astro/answers/970318d.html

prevented the passage of light. Upon this inference was built the collapsed star scenario with matter being squeezed into the theoretical "singularity point."

New Data Brings "Collapsed Star" Theory into Question

A new form of black-hole telescopic data provided a serious challenge to the "collapsed star" speculation. In 1998, an x-ray telescope at the CHANDRA X-ray Observatory observed "jets" of gas being expelled from the center of a black hole[3]:

"Astronomers have been using Chandra and radio telescopes to observe two opposing jets of high-energy particles emitted [from a black hole] following an outburst, first detected in 1998 by NASA's Rossi X-ray Timing Explorer, from the double-star system XTE J1550-564. The X-ray jets, which require a continuous source of trillion-volt electrons to remain bright, were observed moving at about half the speed of light."



Credit: Left: X-ray (NASA/CXC); Right: Illustration (CXC/M.Weiss)

"A series of Chandra images has allowed scientists to trace the evolution of large-scale X-ray jets produced by a black hole in a binary star system. As the schematic shows, gaseous matter pulled from a normal star forms a disk around the black hole. The gas is heated to temperatures of millions of degrees, and intense electromagnetic forces in the disk can expel jets of high-energy particles."
[Paragraphs inverted from original]

[3] http://chandra.harvard.edu/photo/2002/xtej1550/index.html

The black hole, rather than pulling gasses from its binary star partner and "squeezing those gasses to singularity," is discovered to be ejecting the material at a high rate of velocity (measured at one half the speed of light). Astronomers discovered this because the fast moving gas "jet" is emitting high-energy x-ray.

The three left panels in the above illustration show the position of the x-ray emitting jets relative to the black hole over time. The center figure is the J1550-564 black hole itself. The x-ray glow pinpointing the black hole was caused by the gas X-ray emissions recorded on September 22, 1998. That short burst has been retained as a "ghost" through later time frames to position the black hole. In the August 2000 (upper left panel), the "left jet" emission (relative to the black hole)

first appears in the X-ray record. It is identified as the jet burst which is moving towards us.

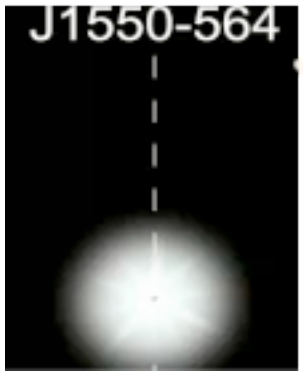
In March of 2002 (second left panel), we see that the "left jet burst" has moved closer towards us, but that its intensity is

less. Also, the "right jet burst" first appears (the one moving away from us).

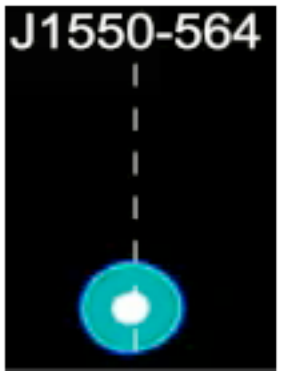
In June of 2002 (lower left panel) the closer "left jet burst" has almost disappeared while the further "right jet burst" has intensified.

SRNRL Analysis of the Data

It is always an error to move too rapidly away from the data towards theoretical interpretations. We must ask ourselves what data our device is actually recording. The CHANDRA telescope is recording X-ray and, therefore, is sensitive only to radiation within a certain frequency range. If an object is emitting frequencies above or below this range, as the surrounding stars are (visible light below X-ray), then those objects will not appear in the data record, just as the surrounding stars do not.



The initiating x-ray burst of Sept. 22 1998 showing black hole in its center. It rapidly fades.



The initiating burst is retained as a "Ghost" in 4-year time-lapse video

The fact that X-ray detection of jet emissions have appeared and disappeared from the record is significant. The burst creating the jet was recorded on September 22, 1998. It rapidly disappears, but is retained as a "ghost" on the time-lapse video. That time-lapse reveals the sudden X-ray appearance two years later of the jet gas burst which had been initiated

on September 22, 1998.[4] The left jet reappears as an x-ray image on June 9, 2000[5].

The fact of disappearance and reappearance cannot be disguised by the researchers because the August 2000 x-ray shows only the "left jet burst" but not the right. Only in the x-ray record of March 2002 does the "right jet burst" appear. The right jet suddenly appears in the record while the intensity of the closer left jet has diminished. The time-lapse video of the X-ray record shows the reappearance of the jets in this time frame.

How do we explain these appearing and disappearing X-ray emissions? I propose that the black hole ejected gas materials at such high energy levels that the radiation emissions quickly rose above X-ray into the gamma range. I further propose that these gamma emission could not be detected by the x-ray telescope and that the ejected mass became invisible. The ejected material became visible again to the x-ray camera when the radiation emissions dropped back into the X-ray

---

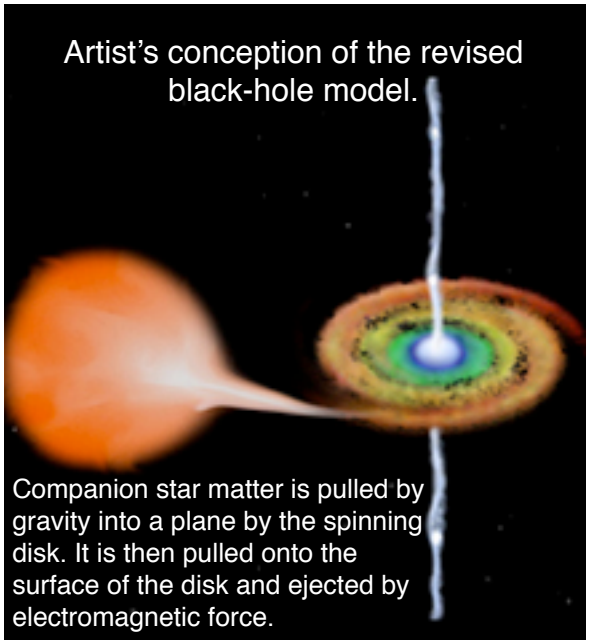
[4] http://chandra.harvard.edu/photo/2002/xtej1550/movies.html

[5] Ibid.

range. How this is possible will be explained using the quantum-dimensional radiation, gravitational and atomic models as applied to black holes. These models give a rational explanation of the data which is lacking in non quantum-dimensional science.

The CHANDRA Revision of the "Singularity" Model of the Black Hole

The CHANDRA data forced two changes to the model of the black hole as a "collapsed star into a singularity point." Both are illustrated in this artist's conception as presented by the X-ray observatory. First, it is proposed the singularity point is a spinning disk, not a point. It is now conceived as two-dimensional and disk-like, with something they are calling "a gravitational horizon." A "horizon" is a two dimensional concept and is the periphery of the planar form upon which one is standing. It is from this disk periphery or "horizon" which black hole gravity is projecting. Stellar matter is pulled into the relatively flat whirlpool caused by the spinning disk and its gravity "horizon."



Matter which is "whirlpooled" into the black hole by the spinning disk is then ejected by the second change proposed for the black hole model. A strong electromagnetic field is proposed which ejects the matter being pulled onto the disk surface from the " gravitational horizon."

The newly modified "singularity" model cannot completely explain the data. First, it cannot explain the appearance and disappearance of the jets in the x-ray photo record. Nor can it explain the variance in time of appearances between the left and right jets. Finally, the consensus model cannot explain the energy variances between the left and right jets.

One of the leading researchers has made this point:
"*The observations indicate that one jet, the [left] jet, is moving along a line tilted toward the Earth whereas the [right] jet is pointed away from the Earth. This alignment explains why the [left] jet appears to have traveled farther from the black hole than the [right]*

one. However, with this alignment, the [left] jet should be brighter than the [right] one, while the [right] jet was actually three times brighter.

'This poses a puzzle. The simple model for jets doesn't explain what we are seeing,' said Philip Kaaret of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., and lead author of another upcoming Astrophysical Journal paper on XTE J1550-564."[6]

We can accept the CHANDRA physical model of the black-holes jets without accepting the underlying explanation. Matter is being pulled from the companion star orbiting the black hole and that matter is spiraling into a flat plane relative to the black hole. The black hole is composed as a disk-like compression of space, not as a singularity point. That is, the black hole has dimensionality and possesses what is deemed a "gravitational horizon." Black-hole gravitational force is projected from this "horizon," which is equivalent with the periphery of the black-hole disk. When matter is pulled into the black hole from the plane of the "horizon," it is ejected at 90° to the surface of the disk as a cylindrical gas jet. This states the physical model proposed for the CHANDRA J1559-564 X-ray data.

I propose that the black holes are not composed of "collapsed matter" but are gravitational focal points of larger stellar formations. It is indisputable that gravitational centers can occupy vacuum. On the atomic level, all matter is composed of small elemental units bound electromagnetically within huge oceans of vacuum. The center of mass for any molecule is statistically certain to be located within this vacuum. Similarly, stellar units like galaxies are composed of stars bound gravitationally within huge oceans of vacuum. The centers of mass for these stellar units are statistically certain to also be located in vacuum.

Black holes are these stellar-formation gravitational focal points. They are the gravitational concentrations or "gravitational focal points" for great numbers of stars bound into a single unit of mass by their own gravitational fields. This is the reason that black holes have been discovered to be commonplace in the centers of galaxies. These black holes are calculated to have mass equivalents of millions of stars. For example, the black hole in the center of our own galaxy

[6] http://chandra.harvard.edu/press/02_releases/press_100302.html

(the Milky Way) is calculated to have an equivalent mass of approximately 3.7 million suns[7]. This calculates to an equivalent mass of approximately 0.0185% of all the stars in our galaxy. The central black hole has a mass equivalence which is mathematically connected to the whole of the stellar formation and mathematically disconnected to the mass of any single star within that formation. Its origin is more likely to be the whole of the stellar formation, not any single star of some super massive size which always seems to appear and "collapse" within the centers of galaxies.

A gravitational force of this magnitude which was concentrated on a restricted section of quantum space, would collapse that space. This paper cannot teach the quantum-dimensional fundamentals needed to understand how and why this is true. However, a set of references are provided for this purpose[8]. The gravitational focal point of the stellar formation is sufficiently strong to compress the quantum-squared vacuum "vacuoles" to near flatness. This nearly eliminates all spacial volume[9]. The compression to flatness spreads space out laterally while eliminating it vertically, thus creating a disk-like barrier to the penetration of light and matter.

A gravitational force which could "flatten" space within its influence zone would also necessarily "thin" attached quantum space to infinity outside the compression zone (see footnote reference "9" for effects of "thinning"). In compressing a volume of space to flatness, the gravitational force must also compress (thin) spacial volume above and below the flattened disk to a distance of infinity. The resistance to such thinning would cause the continuity of quantum space to "tear" or separate for the distance from which the disk had been flattened. The counter force of resistance to volume reduction, the counter force expressed by quantum space to gravitational flattening, would assure such a rift or tear.

What do I mean by the "tearing of space?" The volume above and below the compressed disk— at least to the height of the disk's radius— has been voided by separation from quantum space. In this volume of separation, quantum space does not exist and, therefore, gravity does not exist. Gravity is caused because mass (or a mass equivalent) expands

---

[7] http://adsabs.harvard.edu/abs/2008ApJ...689.1044G

[8] http://paradigmphysics.com/theory_of_time.pdf

[9] http://paradigmphysics.com/vacuole_pulse2.pdf

quantum space. The vectors of expansion between opposing masses neutralize one another causing quantum space to contract the distance between the opposing masses[10]. In a black hole voided of quantum space, gravity cannot and does not exist.

Further, mass has no definition in a black hole. Mass is defined by its capacity to expand quantum space. Mass is the density of an object's volume, and density is completely a Euclidean dimensional characteristic. The quantum dimension cannot have "density" because a quantum is defined by only two geometric points separated by a space void of all other geometric definition (contains no points).

Vacuous space is only two dimensional Euclidean. The quantum-squared vacuum "vacuole" is made by kinking a quantum plane into curvature, remaindering a flat Euclidean plane as a base[11]. Quantum-defined vacuum only has these two Euclidean dimensions.

Any three (Euclidean) dimensional mass trying to occupy this vacuum of only two Euclidean dimensions must expand the volume by one Euclidean dimension. However, quantum-defined vacuum cannot accommodate a third Euclidean dimension. The only mathematical solution to the dilemma of three-dimensional mass trying to occupy a two dimensional space is to significantly expand the quantity of that quantum-defined vacuum (containing only two Euclidean dimensions). This significant expansion of quantum-defined vacuous space by mass causes a resistance to a change in motion for that mass. It supplies mass with "inertia," defined as the force requirements for any change in motion. Inertia only exists because mass tries to occupy quantum-defined vacuum and significantly expands that vacuum[12].

---

[10] If there are three or more objects in opposition to one another, a separate quantum pressure will try to force them onto a single plane which introduces centripetal force and possible orbital motion. See *"theory_of_time.pdf"* above.

[11] http://paradigmphysics.com/QD_Chapt_1.pdf

[12] The amount of expansion is mathematically estimated to be 2^{27} times the mass radius of "maximum density." When the formula is used to calculate the predicted quantum distance to the sun's nearest and smaller neighbor, Proxima Centauri, it gives a "radius of maximum density" for the sun of 10.135% of the sun's measured radius. The sun would reach maximum density at 10.135% of current radius.

Energy is the measure of the quantum-squared-vacuole's resistance to the penetration by mass. Mass cannot have motion through the vacuole. Only energy can have motion through the vacuole since anything with three dimensions cannot penetrate. Only energy, never matter, can have motion within the vacuole.

Time force is that force which provides resistance to the penetration of the vacuole by mass[13]. Therefore, the force of differentiated time is the foundation of all energy. The quantum-squared vacuole is sustained by the force of differentiated time. Potential time energy equals time force (squared) times the alpha space (squared) or force (squared) expressed over distance (squared) which makes it coherent with the standard definition of energy.

Let us follow matter being pulled from the surface of the star companion into the black hole. The matter spirals towards the black hole, the direction of spiral determined by the direction of orbit of the companion. The quantum-dimensional reason for the spiraling of matter around the black hole is different from that proposed by the CHANDRA researchers. The rift in quantum space has produced a gravity "lens."

Gravity is caused by the opposition of mass-induced expansions of quantum space. These forces of expansions in opposition to one another are neutralized by the gravitational formula as expressed in quantum-dimensional terms. Mass is defined by the amount of mathematical expansion of quantum space by the radius of maximum density for the mass. The force of expansion for "mass one" is multiplied by the force of expansion for "mass two," as divided by the square of the distance between them. This gives the amount of neutralization. In quantum dimensional mathematics, gravitational force is an expression of the amount of expansion-neutralization between opposing masses.

The black hole has a "mass equivalence," which is a function of the total mass in the stellar formation existing within the gravitational focal point. The expansion by this "mass equivalence" of the black hole opposes the expansion of the matter falling towards the black hole. However, within the wall of the rift there is no more quantum space and gravity is bent around the rift towards the disk horizon and its maximum gravitational force. The rift in quantum space becomes a gravitational lens which bends falling matter around itself and towards the horizon of the disk. This is the actual explanation of the CHANDRA black hole whirlpool.

---

[13] See The Theory of Time Structured Space at http://paradigmphysics.com/theory_of_time.pdf

The “horizon” or periphery of the compressed disk is the only point in space where black-hole gravity is still tending towards the center of the disk and not bending around the “tear.” Matter enters the black hole. Within the black hole, it loses its definition of mass. If matter were retaining its definition of mass and, therefore, its force of momentum within the black hole, its motion could not be redirected to be ejected at ninety degrees to the face of the disk; it could not become the “jet” proposed by the CHANDRA illustration above.

The consensus argument that this motion redirection to ninety degrees from the surface of the plane is caused by electromagnetic force does not fit what we know about such force. In high-energy accelerators we can bend the paths of fast moving particles to orbit-like curvatures with electromagnetic fields but we cannot force the abrupt, sudden change in direction which is indicated by the black hole jet. An electromagnetic field cannot produce the focused particle stream of the jet indicated by the CHANDRA data.

The quantum dimensional model can explain such abrupt, sudden changes in direction. Matter loses its definition as “mass” when it enters the black-hole rift devoid of all quantum space. It is without inertia and momentum and can be redirected by any force without resistance. The only force still retained at the surface of the compressed black-hole disk is the counter-force of the vacuoles compressed to the loss of most volume. These compressed vacuoles are like compressed springs providing a force counter to that of gravity, a force which is supplied to the inertialess matter captured by the black hole. The direction of that force is 90 degrees to the surface of the compressed disk, that is, in the exact direction which the jet is tending. This force can instantaneously accelerate the “massless” particles to, at least, the speed of light[14].

The motion of matter which enters the black hole “rift” is re-vectored at 90 degrees relative to the surface of the black hole disk. The disk is composed of quantum-squared vacuoles which have been compressed to near volume-less flatness, and separated from quantum space. This re-vectored motion is accelerated to the speed of light. However, this acceleration does not supply energy because the matter has lost mass definition due to the absence of quantum space within the rift. It is only “potential mass” which composes a particle stream focused at 90 degrees relative to the surface of the disk.

[14] The speed of light restriction is explained by the time variance establishing the potential time energy which sustains quantum space as quantum. With the complete absence of vacuoles within the black hole, this restriction is not present. Speeds greater than light are theoretically possible, but not outside the black hole rift.

When the focused particle stream crosses the rift boundary, it reacquires mass definition because it has reentered quantum space. This reacquisition of mass definition converts particle motion to potential energy. In crossing the rift boundary, the focused particle stream also reenters the dense gravitational field of the black hole. Some of the potential energy it has acquired is surrendered to deceleration. The energy surrendered is equal to the gravitational force causing deceleration as expressed over distance. By the Laws of Thermodynamics, this surrender of kinetic energy must be converted to another form of energy. Surrendered energy is converted to heat which produced the X-ray flash recorded by CHANDRA on September 22, 1998.

Quantum-dimensional mathematics produce an equation for gravitational open energy which is missing in conventional three-dimensional math

The CHANDRA researchers have no way to calculate potential energy which is independently acquired and surrendered to a gravitational field. They can only calculate energy which is supplied within a gravitational field. They only have formulas for gravitational fields as closed energy systems. Standard Newtonian mechanics allows them to calculate "escape velocities" (required energy applications for an object to remove itself from a gravitational system). However, these calculations are for objects which start from within and are a component of a gravitational system. Applied energies are exchanged with gravitational potential energies. There is no energy gain or loss by the body itself.

The black-hole jet comprises an open gravitational energy system, not a closed system. The jet matter enters the black-hole's gravity from outside, from the spacial rift which is devoid of quantum space and, therefore, devoid of gravity. It carries with it a component of potential energy which is unrelated to the gravity field. The jet reentering black hole gravity is like a water-jet torch cutting a metal plate. There is a brief period, before the water jet cuts through the plate, when its velocity decelerates and the jet is broken into cloud. During this brief period, the temperature of the water jet can be observed to spike using an infrared thermometer. The kinetic energy of decelerated water is converted into heat energy. Similarly, The velocity of the black hole jet is decelerated when it reenters the black hole gravitational system. Its independently acquired energy while within the rift is converted to heat by the deceleration from the acquired gravitational field. There is nothing within conventional gravitational mechanics to quantify this energy exchange.

Quantum dimensional mathematics provides the calculus for the open gravitational energy system. The problem is that Newtonian mechanics are three dimensional and cannot integrate the standard gravitational equation over distance. Acceleration at any distance from the center of gravity is found by dividing the gravitational constant by the square of the distance. However, standard calculus cannot integrate the derivative of a variable which is used as a divisor since it requires division by "0." The acceleration rate in a gravitational field is not a constant but is the integral of gravitational accelerations across the distance of "fall." This is the "mean" acceleration rate and it determines the terminal velocity of the fall. It, therefore, can determine the energy gained by the fall. Newtonian calculus cannot determine this integral. However, a calculus based upon Quantum-dimensional mathematics makes it possible.

The energy gained or lost by an energy-independent object entering a gravitational system can only be determined by the quantum-dimensional integral for acceleration across distance. It is only this integral which can provide mathematical rationality to the black-hole jet entering an open-energy gravitational system.

What can quantum-dimensional calculus tell us about the observed performance of CHANDRA's J1550-564 black-hole jet? The change in velocity and the greatest energy conversion to heat will occur within the first black-hole radial distance after the matter reenters quantum space. By the open-energy equation, velocity will change by the square root of the gravitational constant and the amount of kinetic energy exchanged for heat energy will equal mass times one-half the gravitational constant. For the next radial distance of travel, velocity will change by 0.663 of the square root of the gravitational constant and the kinetic-to-heat energy exchange will equal mass times 20% of the gravitational constant. By the second radial distance of travel energy exchanged will be less than one half that exchanged during the first radial distance of travel.

The energy being exchanged as heat with matter will continually increase as the matter decelerates in the black-hole gravitational field, but the amount of increase will be less the further the matter travels within the field.

The temperature of the matter rapidly increases as soon as the matter reenters the gravitational field and that temperature more slowly builds over time. This explains the X-ray "burst" recorded by CHANDRA on September 22, 1998. Matter temperature nearly instantaneously achieved X-ray levels, then temperatures more slowly build to radiation

emissions "above X-ray" to gamma radiation outside the frequency sensitivities of the CHANDRA equipment. The burst disappeared from the X-ray photographic record.

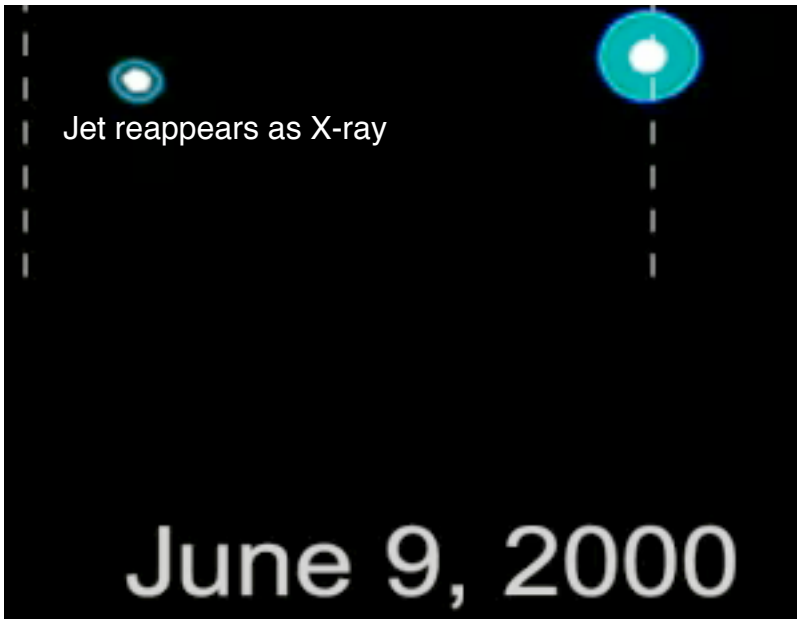
A word must be said about the difference between X-ray, gamma and normal light radiation as proposed by the quantum dimensional model. Matter emitting X-ray can retain the emitting electron, though in an orbit which is collapsed out of four-dimensional space. Intact four-dimensional orbits can only emit 91.143 nanometer ultraviolet (13.6037 eV) and below[15]. Any radiation emission above 13.6037 eV is X-ray requiring the electron to collapse out of its four-dimensional orbit in order to emit the frequency. The quantum-dimensional model defines gamma as any radiation emission above 255.5 KeV. Emissions above this would require orbital velocities which would exceed the speed of light. Such gamma radiation emissions require ejection of the electron from the atom as a beta particle. Ultraviolet and below are light emissions from intact quantum orbitals. X-rays are radiation emissions which require the electron to collapse out of its four-dimensional orbital into three dimensional space. Gamma is a radiation "burst" which requires the ejection of the electron.

All thermal-induced radiation is a form of cooling, but this is especially true of gamma/beta emissions. The energy lost to the nucleus is the electron voltage of the gamma emission plus the energy required to dislodge the electron from the atom. At the gamma emission stage, the matter is simultaneously gaining thermal energy by gravitational conversion and losing thermal energy by gamma emissions and beta particle ejections. In the early stages, the gain of energy from the gravitational field is greater than the loss of energy from gamma/beta emissions. However, this relationship is reversed as the energy gains from gravitational conversion becomes weaker and weaker with distance.

The ejected beta electrons, however, are not lost to the matter cloud. They are being ejected into a cloud of ionized gas and carried along in the cloud by the positively charged ions. The nuclei, however, are still too hot to allow the electrons back into the atom as X-ray emitters. Cooling by gamma/beta emissions overcomes heating by gravitational conversion at a certain distance from the black hole. The jet cloud begins to cool. When it drops to the temperature which allows for X-ray orbitals, The electrons are reacquired by the atom and begin reemitting X-ray.

---

[15] See this reference material for explanation of quantum orbitals and their relationship to X-ray: http://paradigmphysics.com/QD_Chpt_1.pdf



This is what happened when the left J1550-545 jet reappeared on the CHANDRA X-ray photograph of June 9, 2000.

It appears to brighten after September 11, 2000, and then slowly fades to the much lower brightness in the image of March 11, 2002. By June 19, 2002, it has nearly disappeared.

We cannot really test the open energy equation using the measured velocities of the left jet without knowledge of the black hole radius and gravitational constant (small "g") at the horizon of the black hole. However, we can use the measured distances between the nearer jet's appearance of June 9, 2000, and the jet's virtual disappearance on March 11, 2002, to determine variances between the energies being contributed by deceleration in the gravitational field.

Simple trigonometry tells us that, regardless of the angle of inclination towards us by the left jet, the distance measures of jet motion on the plane of the photograph are exactly proportional. The distance at disappearance is 1.32 times the distance at appearance. If we set the value of "x" as measured in black-hole radial units equal to the distance of appearance, we can calculate velocities absorbed by the gravitational system and energies supplied:

$$\textbf{velocity reduction at "x"} = -(x-1)\sqrt{\frac{2g}{x}} \quad ; \qquad x = \textbf{radial distance at appearance}$$

We can calculate the difference in surrendered velocities and acquired energies at the "1.32x" radial distance of disappearance versus the "x" radial distance at jet appearance. We can do this because the contribution of the "nonfunctional" radial distance of "1" in the above equation becomes negligible. "X" can be measured in light years and is obviously millions of black-hole radial units in distance. Subtracting "1" radial unit from this amount is no longer significant.

Velocity reduction at "1.32x" minus velocity reduction at "x" gives us the difference of velocity reduction between appearance and disappearance of the jet. Velocity reduction at "1.32x" equals "1.15x" times the deceleration factor of the square root of "2g" divided by "x." When the velocity reduction of "x" times the same deceleration factor is subtracted from this, we remainder a velocity reduction across the distance from appearance to disappearance of "0.15x." That is, velocity reduction at disappearance is only 15% of what it had been at the appearance of the jet. When calculated as energy contributed to the jet, the amount being surrendered at disappearance is only 2.23% of the amount being surrendered at appearance. During the period of the CHANDRA observations from left jet appearance to its disappearance, the amount of energy being contributed by the black-hole gravitational system to heat is reduced by 97.77% . Gravitational contribution as heat contradicts radiological cooling, but the gravitational contribution is almost eliminated over the period, surrendering energy change to radiological cooling.

A word must be said as to why the nearer jet appears to briefly brighten after September 11, 2000, only to resume its long fade. The answer is rather simple. From first appearance of June 9 to brightening on September 11, a greater portion of the jet cloud is falling from the gamma range to the X-ray range. The cloud appears to brighten because more of the matter is now emitting X-ray.

The Cause of the Late-Appearing, More Energetic Further Jet

On March 11, 2002— 1351 days after the initiating blast on June 9, 1998— the further jet appears for the first time. At first appearance it is brighter than the first jet ever appeared, even though the second jet's path is determined to be inclined away from the earth and is being viewed from a greater distance. What can explain this late appearance and the brightness of an object further from us? The obvious answer is that the matter in the second jet is heavier, perhaps composed of elements higher in the Periodic Table.

It is possible that a heavier element distribution to the lower disk surface could occur due to a "centrifuge effect" of the gravity-lensing whirlpool. This is especially possible if the axis of rotation of the star companion to the black hole were inclined toward the black hole, thus presenting its northern hemisphere. In this case, the stellar material would be taken from above the equator and would approach the black hole disk from its northern side. The centrifuge effect would present the heavier material to the lower disk (southern) surface and the lighter material to the upper disk (northern) surface.

In any case, the CHANDRA data reveals that the further jet is more energetic by the size and intensity of its appearance and that its fall back into the X-ray range is severely delayed. Both of these characteristics can be explained by quantum-dimensional physics. The heavier matter absorbed by the southern disk surface would also lose its definition of mass while within the spacial rift and would be accelerated to the speed of light on a vector of 90 degrees to the surface of the disk. Since energy is a function of mass ($E=mv^2/2$), the heavier elements of the southern surface would reenter quantum space at higher energy than the lighter elements of the northern surface. Southern elements would begin with greater energy which would be converted to heat by deceleration within the gravitational field, as described above. Since gravitational deceleration is independent of mass but energy is not, the energy contributed as heat would be greater for the southern jet over the northern jet at equivalent radial distances from the rift boundary. The heavier southern jet would start with greater energy and acquire greater energy over time than the lighter northern jet.

In the nineteenth century, James Joule demonstrated that a relationship between kinetic energy and heat energy is certain. The formula for kinetic energy is the following:

$$\text{Joule}=(\text{kg})(\text{meter}/\text{sec})^2$$

Joule was able to demonstrate that heat energy can be calculated using these kinetic units for energy:

$$239 \text{ joules}=(57.121 \text{ grams})(1^\circ \text{ Centigrade})^{16}$$

Joule's experimentally determined kinetic-to-heat energy calibration is supposed to be true for water only. However, our lab has proved that the Joule equation for heat energy, when formulated as above, can be used to calculate the loss of energy due to temperature drop from the negative irradiation of cotton.

In 2008 our lab was able to connect Joule's formulation to Planck's Constant in a study of radiological cooling. The quantum-dimensional model of the electron orbital identified the fluorescent causing frequencies of 365 nanometer and 820 nanometer as "negative radiation." These frequencies stimulated fluorescence from the hydrogen bonds of certain organic molecules because they represent the subdivisions of the highest frequency of intact orbitals known as the "root

[16] For this formulation of Joule heat energy, see http://paradigmphysics.com/n-rad_study.pdf

frequency." All other frequencies output by hydrogen are negations of subdivisions of the quantum-squared for this root frequency[17]. The quantum-squared orbitals can only be differentiated by the negation of subdivision. The quantum can never be subdivided. Therefore, there are no quantum-squared orbital positions available for the 365 nanometer and 820 nanometer subdivisions. The nucleus continuously expends its heat energy in attempt to place hydrogen bond electron in non existent orbit. It outputs fluorescence at a loss of temperature.

We measured the drop in temperature being caused by the fluorescence of cotton fibers bathed in 365 nanometer soft ultraviolet. Energy for this drop in temperature was calculated using the Joule formula. It was found that, when the mass of the molecule was factored out using the Joule factor for mass but leaving in the Joule factor for kinetic energy (as shown in the above equation), Planck's Constant could be derived[18]. The drop in temperature was found to be a function of Planck's Constant, the Joule "kinetic energy factor," and the number of fluorescing electron bonds— when the atomic number of the molecule and Joule's "mass factor" were factored out of the energy equality.

The significance of these results for the J1550-564 black-hole jet is that it shows that radiological cooling can be related to the kinetic-to-heat energy conversion. Radiological cooling energy is related to Joule's "kinetic energy factor," Planck's Constant and the number of emitting electrons. Transference of kinetic to heat energy by the gravitational field incorporates the Joule "mass factor." The greater the mass of the jet material, the greater the energy at equivalent changes in velocity which lead to equivalent changes in temperature. This greater heat energy is stored in the capacitance fields of the electron shell/sub-shell structure[19].

Generally, heavier elements store at least twice as much converted energy per electron as does simple hydrogen because mass per electron increases. (See Quantum Periodic Table of Elements which shows ratio of neutrons to protons/elec.[20])

---

[17] See our reformulation of the Rydberg distribution for hydrogen in: http://paradigmphysics.com/QD_Chpt_1.pdf

[18] http://paradigmphysics.com/n-rad_study.pdf

[19] For proof of nuclear heat energy storage in electron capacitance fields see our YouTube video *"Part II: The Discovery of the Alterable Nuclear Energy Field"*: http://www.youtube.com/watch?v=PXUohP67mzA&feature=relmfu

[20] http://paradigmphysics.com/quant-periodic-table.pdf

Through calcium, the ratio of "neutrons to protons/electrons" is generally "1 to 1" for even numbered elements and "1(+1) to 1" for odd numbered elements. The regularity of ratio is explained by the quantum-dimensional model of the neutron and its function within the nucleus. After calcium (atomic number "20"), the ratio begins to increase with more neutrons per proton. Simple hydrogen has a single nuclide for its one electron. Every other element has two nuclear elements or more per electron and greater mass per electron.

Since kinetic conversion to heat is mass based, every element stores at least twice as much converted energy in an electron/nuclear capacitance field as does simple hydrogen. Radiation frequency is a function of the heat energy stored in the electron/nuclear capacitance field[21]. Therefore, heavier elements will provide more energetic radiation discharges over the same distance of gravitational energy conversion when compared to simple hydrogen. But that is not the end of the story.

In order to radiate in the X-ray range (and retain the electron) or in the gamma range (and eject the electron) nuclear energy must cause the electrons to migrate into the sub-shells of the highest orbital shell. That is, heat energy stored in electron capacitance fields must move the electrons from their base-state sub-shells into the highest energy "1" shell which has the greatest number of sub-shells and which can accommodate the greatest number of electrons. It is only from the highest valence sub-shell of the "1" shell (the "1s" sub-shell) that electrons can be launched into the X-ray and gamma ranges.

The valence "1s" sub-shell can contain only two electrons. That is, the heat-energy stored in the capacitance fields of only two of the total number of electrons can be applied to radiological cooling. The rest of the converted energy is "stored" in the orbital sub-shells of non-valence electrons. The capacity of non-valence electron orbitals to store nuclear heat energy is not known by general physics. This is because general physics has the wrong sub-shell orbital model. They rely upon the obsolete "Schrödinger probability-cloud model." The Schrödinger eigenfunction "lobed" orbital cannot provide for linear motion, cannot identify exact electron voltages for the shell/sub-shell orbital structure and gives an incorrect formula for the number of electrons which can occupy a specific sub-shell.

---

[21] Ibid. *"Part II: The Discovery of the Alterable Nuclear Energy Field"*: http://www.youtube.com/watch?v=PXUohP67mzA&feature=relmfu

In contrast, the quantum-dimensional model of the electron orbital provides a table of exact electron voltages for the shell/sub-shell structure. These exact electron voltages have been applied to the "light doublet" data from the last century (i.e. the "Zeeman effect" and the sodium "D-lines") to identify how lower-order sub-shells can accommodate greater numbers of electrons[22]. Electron-voltage pressure upon lower-order sub-shells force slightly offset orbits (doublets) which provide additional electron capacity for the lower sub-shell orbits.

The electron orbital structure is much more compact and ridged than is realized by the Schrödinger model. The nuclear heat energy stored in an electron's capacitance field is absolutely constrained if the next higher sub-shell is filled to capacity. No amount of energy invested by the nucleus can force more electrons into a filled sub-shell.

Mathematics makes this clear. Any electron in a lower sub-shell tending towards a filled sub-shell above, has a very specific electron voltage. If the energy stored in the field is increased (greater amount of heat energy), this increase cannot effect field voltage since the field electron voltage is absolutely set by the sub-shell. If voltage is restricted and field energy is increased, then, mathematically, the charge must also increase (charge=Energy/voltage). The charge of the electron tending towards the filled sub-shell will increase as field energy increases. This will make the filled sub-shell even more resistant to its inclusion since multiplying the charge of an electron is the same as multiplying the number of the electron. Energy is stored in the fields of electrons which are prevented from migrating by filled sub-shell above them.

The SRNRL negative-radiation study demonstrated that radiation cooling would be determined by the number of valence electrons which are candidates for gamma/beta ejection with an accompanying loss of energy and lower temperatures. For heavier elements, these ejections would be at a higher energy per emission but represent a smaller proportion of overall heat energy gained from black-hole gravitation. The dissipation of energy gained would be at a slower rate. This is exactly what the CHANDRA J1550-564 black-hole jet data showed. The heavier southern jet appeared two years after the initial appearance of the lighter northern jet. It appeared much brighter than the closer, lighter jet had ever appeared showing its higher energy per emission as predicted by the quantum-dimensional model.

[22] For the explanation of this see: http://paradigmphysics.com/Orbital_doubling.pdf

In the meantime, the lighter jet was dissipating almost all of its energy gains. If it were composed mostly of hydrogen, it would store little if any energy in its mass, as the data showed the heavier jet had done. Over the measured distance of disappearance for the lighter jet, quantum-dimensional calculus determined that energy gains from gravitational conversion had been reduced by 97%. The lighter jet faded as its energy input was reduced to near nothing. There was a direct relationship between energy gain from gravitational conversion and energy loss through irradiation.

It should be acknowledged that the quantum-dimensional model of space and matter completely accounts for the CHANDRA XTE J1550-564 black hole X-ray data recorded between 1998 and 2002. This is something which the researchers have admitted, in print, that they have been unable to do with a conventional model.

The complete quantum dimensional hypothesis must be accepted as confirmed: that the black hole constitutes a gravitational open energy system with respect to the jet; that the velocity and acquired potential energy of the jet must therefore have occurred independent of and outside the black-hole gravitational system; that the quantum-dimensional equation for gravitational open energy is proved by accurately predicting the X-ray fade of the nearer and lighter jet under measurably deceleration; that the quantum-dimensional atomic model accurately predicted the storage of energy by the mass of the heavier, further jet as well as its brighter X-ray emissions and that this explained its brighter and later appearance in the X-ray record.

Submitted by:

Lawrence Dawson
Professor of Quantum Physics,
The Snake River N-radiation Lab

email: nemodawson@srnrl.com