

Further Communications on the Black Hole Controversy

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Professor Tim Maudlin,

Dear Sir,

I write this long email to you in response to the email exchange you recently had with Mr. David White in Australia about the black hole, in relation to your recent book on physics, space and time, and my research papers on Einstein's General Theory of Relativity. As you know Mr. White copied the correspondence to me. I therefore copy this correspondence to Mr. White for his information. I make very little use of any mathematics so that Mr. White and anybody he wishes to share this material with can follow it easily, as most people are not conversant with tensor analysis and differential geometry. All the salient facts however can be explained without mathematics, as I do herein.

I looked you up on your website

<http://philosophy.as.nyu.edu/object/timmaudlin.html>

and noted that you have a lucrative position as a university professor, enjoying all associated benefits and privileges of such a post, and that you hold qualifications in philosophy and physics. I have not read your book yet but it is evident to me already that what you have presented in your book is nothing more than the usual fallacious dogmas on space and time and the General Theory of Relativity.

Mr. White initially wrote to you on 16 August 2012 and referred you to some of my papers here:

<http://www.sjcrothers.plasmaresources.com/papers.html>

Now I note that in your email to Mr. White on 16 August 2012 you said this:

“I looked quickly at one of Mr Crothers papers, and what I read was wildly inaccurate. Furthermore, the claims are certainly not presented in a proper scholarly way, and I will not devote my time to them. I would not suggest that you do either.”

Mr. White wrote to you again on 16 August 2012 and you replied to him on the same date, with the following remarks:

“Just to be clear, of course there has been no irrefutable evidence of black holes. That is not at all the issue. General Relativity itself might be incorrect and break down in extreme circumstances: many physicists imagine this is true. But that is not the issue. The issue is whether black holes are a mathematical consequence of General Relativity and, more exactly, whether they are a generic feature of solutions to the General Relativistic field equations under certain conditions (those associated with the collapse of a sufficiently massive star, for example). This is a purely mathematical question, which has been solved, most notably by Penrose and Hawking. Maybe there are no black holes: what that would show is that the General Relativistic Field equations are wrong. The claim of the paper, however, is that the Field Equations themselves do not imply in certain generic circumstances that black holes will form. They do. So the paper is incorrect.”

Concerning your first remark you simply say that you “looked quickly at one” of my papers and say that it is “wildly inaccurate”, but you did not substantiate this claim at all. You did not even indicate which paper you claim to have briefly perused. This is very unscientific. Furthermore, your assertion that my “claims are certainly not presented in a proper scholarly way” is patently false since all my papers are fully referenced and my arguments given in a logical and scientific fashion. You might not like the way I express myself, but that is a subjective thing that has nothing to do with the price of fish. Your remark borders upon the Ad Hominem and, ipso facto, also carries no scientific weight whatsoever. One can only be left with suspicions as to why you made such irrelevant remarks, especially since you also urged Mr. White not to devote any time to my papers because you will not do so either. Refusal to read my papers I take as a refusal to address the scientific facts. That too is quite unscientific.

I now come to your second set of remarks. You assert on the mere authority of Hawking and Penrose that Einstein’s field equations imply the existence of black holes and so my paper (whichever one you briefly perused) is wrong. Your claims, and those of Hawking and Penrose, are false, as I shall now demonstrate.

The first thing to note is that the alleged black hole is obtained NOT from Schwarzschild’s solution at all, but from the corruption by David Hilbert (published December 1916) of the solutions independently found by Karl Schwarzschild in 1915 (published in January 1916) and Johannes Droste in May 1916 (published 1917) for the so-called ‘mass-point’. Here are the papers that prove this fact, as correctly reported in my published papers in accordance with accuracy and proper scholarship:

www.sjcrothers.plasmaresources.com/schwarzschild.pdf

www.sjcrothers.plasmaresources.com/Droste.pdf

www.sjcrothers.plasmaresources.com/hilbert.pdf

Hilbert’s solution is not equivalent to that due to Schwarzschild and that due to Droste. It is from Hilbert’s corruption that the black hole was spawned. The solutions by Schwarzschild and Droste are equivalent, and there exists an infinite number of equivalent solutions as adduced in my published papers, even though there is absolutely no physical meaning to these equivalent solutions or to Hilbert’s corruption thereof.

Now, recall that according to Einstein matter (which Einstein asserts consists of mass and electromagnetic fields) is the cause of his gravitational field. His gravitational field is NOT a force but is due to a curvature in his 4-dimensional spacetime owing to the presence of matter. Matter and spacetime are causally linked in General Relativity. Thus, Einstein’s field equations,

“... couple the gravitational field (contained in the curvature of spacetime) with its sources.”
(Foster, J. & Nightingale, J.D., A Short Course in General Relativity, Springer-Verlag, New York, 1995).

“Mass acts on spacetime, telling it how to curve. Spacetime in turn acts on mass, telling it how to move”. (Carroll B. W. and Ostlie D. A. An Introduction to Modern Astrophysics, Addison--Wesley Publishing Company Inc., 1996).

Hence, in short, Spacetime geometry = - k x causative matter (i.e. sources)

where k is a coupling constant. Mathematically this is expressed by Einstein's field equations as:

$$G_{\{uv\}} = -kT_{\{uv\}}$$

where $G_{\{uv\}}$ is called the Einstein tensor and it denotes the geometry and its curvature of spacetime, i.e. Einstein's alleged 'gravitational field'. $T_{\{uv\}}$ is called the energy-momentum tensor and it describes the material sources of the gravitational field, i.e. the matter that causes the curvature of spacetime geometry and hence the gravitational field. According to Einstein, if $T_{\{uv\}} = 0$ then one finds that $G_{\{uv\}}$ reduces to the Ricci tensor $Ric = R_{\{uv\}}$ and his field equations allegedly reduce to

$$Ric = R_{\{uv\}} = 0$$

Now we note that by setting $T_{\{uv\}} = 0$ Einstein has removed ALL matter and hence ALL sources from his field equations, by the very definition of $T_{\{uv\}}$. Therefore $Ric = 0$ describes a Universe that actually contains NO matter and hence NO sources and so there can be no black hole since the alleged mass of a black hole is a source for an alleged gravitational field. We note that according to the Dictionary of Geophysics, Astrophysics, and Astronomy, (Edited by Richard A. Matzner, CRC Press LLC, Boca Raton, USA, 2001),

http://www.4shared.com/get/DYuEHhd3/dictionary_of_geophysics_astro.html

“Black holes were first discovered as purely mathematical solutions of Einstein's field equations. This solution, the Schwarzschild black hole, is a nonlinear solution of the Einstein equations of General Relativity. It contains no matter, and exists forever in an asymptotically flat space-time.”

Now a Universe that contains no matter contains no gravitational field and does not model the actual Universe since the actual Universe contains lots of mass with interacting gravitational fields, magnetic fields, electromagnetic radiation, plasma responding to electromagnetic fields, etc. Thus $Ric = 0$ has no physical meaning, contrary to Einstein's claims, and those of his followers. You see, Einstein removes all matter and hence all sources by writing $Ric = 0$ as a result of setting the energy-momentum tensor to zero, then in the next breath he says $Ric = 0$ describes the field “outside a body” such as a star; “where the $T_{\{uv\}}$ vanish” (Einstein A., The Foundation of the General Theory of Relativity, Annalen der Physik, 49, 1916). Since matter is still the source of Einstein's gravitational field, when one asks Einstein, then what is the SOURCE of this alleged gravitational field “outside a body” such as a star, he tells us that it is the body ‘outside’ of which the gravitational field exists! Indeed, in relation to Hilbert's solution Einstein says:

“... M denotes the sun's mass centrally symmetrically placed about the origin of coordinates.”
(Einstein, A., The Meaning of Relativity (Science Paperbacks, Methuen & Co., 1967)

This is circular reasoning (self-referential) and therefore invalid, remembering that he has already removed all matter and hence all sources by the very writing of $T_{\{uv\}} = 0$ to get $Ric = 0$. Einstein cannot remove all matter and hence all sources on the one hand by writing $T_{\{uv\}} = 0$ to get $Ric = 0$ and then in the next breath insert the notion of a source being present with the deceptive words “outside a body”, because there is no body present for anything to be ‘outside’ of by virtue of $T_{\{uv\}} = 0$. His argument violates elementary logic and is therefore false: nothing but a subtle play on the words “outside a body”. Now since $Ric = 0$ has no physical meaning, Hilbert's metric has no physical meaning either, and so it cannot contain mass and hence a black hole. The same holds for

Schwarzschild's actual solution as well and also for that due to Droste. Thus, there is no such thing as a black hole. The black hole is not predicted by General Relativity at all.

The above argument is sufficient to invalidate the concept of the black hole completely. But we can do it again by another simple argument. Recall that according to Einstein and his followers his Principle of Equivalence and his Special Relativity must hold in sufficiently small finite regions of his 'gravitational field' and that these regions can be located anywhere in his 'gravitational field' (Einstein, A., *The Meaning of Relativity* Science Paperbacks, Methuen & Co., 1967). Now we note that both the Principle of Equivalence and Special Relativity are defined in terms of the a priori presence of multiple arbitrarily large finite masses and photons. It is therefore impossible for the Principle of Equivalence and Special Relativity to manifest in a spacetime that by mathematical construction contains no matter. But $Ric = 0$ is a spacetime that by mathematical construction contains no matter! This $Ric = 0$ violates the physical principles of General Relativity and so it is inadmissible and therefore has no physical significance. Since Hilbert's metric is a solution for $Ric = 0$ it is also of no physical significance because it is a metric for a spacetime that by mathematical construction contains no matter. But it is from Hilbert's metric that the black hole was first conjured (see the citation above). Therefore, the black hole is not consistent with General Relativity at all. General Relativity does not predict the black hole. Since the black hole is a theoretical entity initially obtained from Hilbert's metric, the black hole does not exist!

We can prove that the black hole does not exist by yet a third simple argument. Recall that the Principle of Superposition does not apply in General Relativity because Einstein's field equations are highly non-linear. Mathematically this means that if X and Y are separate solutions to Einstein's field equations then the linear combination $aX + bY$ where a and b are scalars, is NOT a solution. Physically this means that one cannot simply pile up masses and photons and charges and electromagnetic fields in any given spacetime because each and every proposed configuration of matter must be described by a corresponding energy-momentum tensor and Einstein's field equations solved separately for that energy-momentum tensor. Now $Ric = 0$ is a spacetime that by mathematical construction contains no matter and so Hilbert's solution describes a Universe that contains no matter. But the actual Universe contains a lot of matter, and since the Principle of Superposition does not apply in General Relativity one cannot insert matter into the spacetime of $Ric = 0$ and hence neither into Hilbert's associated metrical solution, to get any amount of matter as one pleases. Thus, there can be no black hole in Hilbert's metric and so there is no black hole in the spacetime of $Ric = 0$ by the very definition of $Ric = 0$. Thus, the black hole does not exist.

A fourth simple argument again proves that the black hole does not exist. Let us assume for the sake of argument that $Ric = 0$ actually contains one mass, as Einstein (falsely) claims, so that Hilbert's metric describes a Universe that contains only one mass. Thus, the relevant spacetime is infinite and totally empty save for the presence of the mass of the alleged black hole. There is no meaning to a gravitational field outside the said mass in a Universe that contains only that one mass. All experiments show that gravitation is an interaction between masses. Now neither the Principle of Equivalence nor Special Relativity can manifest in a spacetime that allegedly, by mathematical construction, contains only one mass. Furthermore, there are no known solutions to Einstein's field equations for two or more masses and no existence theorem by which it can even be asserted that his field equations contain latent solutions for two or more masses, and since the Principle of Superposition does not apply in General Relativity one cannot simply pile up masses and photons and charges and electromagnetic fields in the spacetime of $Ric = 0$, described metrically by Hilbert's solution, in order to obtain multiple masses, be they other black holes or other matter for the black holes to devour, or to have charged masses or electromagnetic radiation outside the alleged Hilbert

black hole. Hence $Ric = 0$ and Hilbert's metric violate the physical principles of General Relativity and are therefore once again inadmissible. Moreover, ALL alleged solutions to Einstein's field equations for a black hole pertain to an infinite Universe that contains only ONE isolated mass but otherwise empty, be it a 'Schwarzschild' black hole (i.e. a Hilbert black hole); be it a charged black hole (i.e. the Reissner-Nordström black hole); be it a rotating black hole (i.e. the Kerr black hole); or be it the charged and rotating black hole (i.e. the Kerr-Newman black hole). In ALL cases the Principle of Superposition does not apply in General Relativity and there are no known solutions to Einstein's field equations for two or more masses or a relevant existence theorem, and so one cannot pile up additional masses and photons and charges and electromagnetic fields into the spacetime of any of these alleged types of black hole. Hence the Principle of Equivalence and Special Relativity cannot manifest in the spacetime associated with any of the types of black hole alleged and so they ALL violate the physical principles of General Relativity. Thus none can describe the actual Universe. Moreover, it is therefore nonsense to assert that the black hole can exist in multitudes and interact with one another, collide or merge with one another, be components of binary systems, or exist with other matter that they can swallow and digest (see also McVittie, G. C., Laplace's alleged "black hole". The Observatory, v.98, 272, 1978, www.sjcrothers.plasmaresources.com/McVittie.pdf). But here is what Hawking tells us (Hawking, S. W., The Theory of Everything, The Origin and Fate of the Universe; New Millennium Press, Beverly Hills, CA., 2002),

"Also, suppose two black holes collided and merged together to form a single black hole. Then the area of the event horizon of the final black hole would be greater than the sum of the areas of the event horizons of the original black holes." Here is what Chandrasekhar says (Chandrasekhar, S., The increasing rôle of general relativity in astronomy, The Observatory, 92, 168, 1972),

"From what I have said, collapse of the kind I have described must be of frequent occurrence in the Galaxy; and black-holes must be present in numbers comparable to, if not exceeding, those of the pulsars. While the black-holes will not be visible to external observers, they can nevertheless interact with one another and with the outside world through their external fields."

"In considering the energy that could be released by interactions with black holes, a theorem of Hawking is useful. Hawking's theorem states that in the interactions involving black holes, the total surface area of the boundaries of the black holes can never decrease; it can at best remain unchanged (if the conditions are stationary)."

Here is what Schutz says (Schutz, B. F., A first course in general relativity, Cambridge University Press, UK, 1990),

"... Hawking's area theorem: in any physical process involving a horizon, the area of the horizon cannot decrease in time. ... This fundamental theorem has the result that, while two black holes can collide and coalesce, a single black hole can never bifurcate spontaneously into two smaller ones."

"Black holes produced by supernovae would be much harder to observe unless they were part of a binary system which survived the explosion and in which the other star was not so highly evolved."

Here is what Carroll and Ostlie say (Carroll, B. W. and Ostlie, D. A., An Introduction to Modern Astrophysics, Addison--Wesley Publishing Company Inc., 1996),

"The best hope of astronomers has been to find a black hole in a close binary system. ... If a black hole coalesces with any other object, the result is an even larger black hole. ... If one of the stars in a

close binary system explodes as a supernova, the result may be either a neutron star or a black hole orbiting the companion star. ... the procedure for detecting a black hole in a binary x-ray system is similar to that used to measure the masses of neutron stars in these systems. ... What is the fate of a binary x-ray system? As it reaches the endpoint of its evolution, the secondary star will end up as a white dwarf, neutron star, or black hole.”

In addition, there is no meaning to a charged black hole because a single charge cannot exist in a Universe without other charges and an electric field cannot exist in a Universe that contains only one charge, and there can be no multiple charges without multiple masses. Similarly there is no meaning to a rotating black hole since there is nothing relative to which the black hole can be said to be rotating. After all the alleged rotating black hole is an isolated mass in an otherwise entirely empty infinite Universe. Likewise there is no meaning to a charged and rotating black hole because there is no meaning to a Universe that contains only one charge and no meaning to the concept of rotation in a Universe that contains only one charged mass and hence also any electric field. There is also no meaning to a gravitational field in a Universe that contains, by mathematical construction, only one mass, be the gravitational field alleged to be either outside the mass or inside the mass because the latter case is also excluded by the fact that the Principle of Equivalence and Special Relativity must hold in Einstein’s gravitational field, that the Principle of Superposition does not apply in General Relativity, and that there are no known solutions to his field equations for two or more masses and no existence theorem by which it can even be asserted that his field equations contain latent solutions for two or more masses.

An additional simple argument proves that the black hole is not consistent with General Relativity. The quantity ‘r’ has never been properly identified by the relativists, including Einstein himself in relation to any of the alleged black hole metrics (solutions). In the Hilbert metric it has been variously and vaguely called a “distance”, “the radius”, the “radius of a 2-sphere”, the “coordinate radius”, the “radial coordinate”, the “Schwarzschild r-coordinate”, the “radial space coordinate”, the “areal radius”, the “reduced circumference”, “the shortest distance to the centre”, and even “a gauge choice: it defines the coordinate r”. In the particular case of $r = 2Gm/c^2$ it is invariably called the “Schwarzschild radius” or the “gravitational radius” for the ‘radius’ of the event horizon of the black hole. In his paper ‘On a Stationary System With Spherical Symmetry Consisting of Many Gravitating Masses’, The Annals of Mathematics, Second Series, Vol. 40, No. 4 (Oct., 1939), pp. 922-936, (<http://www.jstor.org/stable/1968902>), Einstein uses the Hilbert metric, written in the so-called isotropic coordinates, and continually and incorrectly refers to r as “the radius”. None of the foregoing various and vague concepts of r are correct because the irrefutable geometrical fact is that r, in the spatial section of Hilbert’s corrupted version of the Schwarzschild/Droste metrics, is the inverse square root of the Gaussian curvature of the spherically symmetric geodesic surface in the spatial section, as proved in my papers, and so it does not denote any distance at all in the spherically symmetric metric manifold for “Schwarzschild” spacetime or Reissner-Nordström spacetime, let alone ‘the radius’, and so it can never be treated as either a radius or a distance in any alleged black hole solution, contrary to the practice of Einstein and his followers. Similarly it is not the radius of anything in the Kerr and Kerr-Newman metrics. The fact that ‘r’ goes by so many different definitions attests to the utter confusion of the relativists as to its actual geometric identify in all these metrics. But Einstein and his followers always treat the quantity r in these solutions as the radius, as the notion of ‘Schwarzschild radius, the radius of the ‘event horizon’ in Hilbert’s solution attests. Furthermore, in Hilbert’s solution it is asserted that there is a ‘coordinate singularity’ at $r = 2Gm/c^2$ (the ‘Schwarzschild radius) and a singularity at $r = 0$ (a ‘physical singularity’). But at both of these values there results division by zero, which any schoolboy knows is undefined in mathematics. Nonetheless the proponents of the black hole permit these two divisions by zero, one for the

‘Schwarzschild radius’ and one for the infinitely dense point-mass ‘singularity’ of the black hole. The fact is, were the metrical solution is singular it has no meaning because it too is undefined there. Furthermore, a simple calculation proves that Special Relativity forbids infinite density and since according to Einstein Special Relativity must hold in sufficiently small regions of his gravitational field (see citation above), infinite density cannot occur in General Relativity either, no matter how it is alleged to form, because infinite density cannot be reconciled with the Theory of Relativity. Nonetheless, according to Hawking (Hawking, S. W., The Theory of Everything, The Origin and Fate of the Universe; New Millennium Press, Beverly Hills, CA., 2002),

“The work that Roger Penrose and I did between 1965 and 1970 showed that, according to general relativity, there must be a singularity of infinite density, within the black hole.” Dodson and Poston (Dodson, C. T. J. and Poston, T., Tensor Geometry -- The Geometric Viewpoint and its Uses, 2nd Ed., Springer--Verlag, 1991) assert:

“Once a body of matter, of any mass m , lies inside its Schwarzschild radius $2m$ it undergoes gravitational collapse . . . and the singularity becomes physical, not a limiting fiction.”

According to Carroll and Ostlie (Carroll, B. W. and Ostlie, D. A., An Introduction to Modern Astrophysics, Addison--Wesley Publishing Company Inc., 1996),

“A nonrotating black hole has a particularly simple structure. At the center is the singularity, a point of zero volume and infinite density where all of the black hole’s mass is located. Spacetime is infinitely curved at the singularity. . . . The black hole’s singularity is a real physical entity. It is not a mathematical artifact . . .”

It must be noted that a point is a mathematical entity that has no extension by definition but a mass is a physical object that has extension by virtue of being material, not mathematical, so the notion of a ‘point-mass’ is a fiction, not a ‘real’ object. We note further that in Newton’s theory of gravitation and of mechanics infinitely dense point-masses occur, but they are referred to as ‘centres of masses’. Now a centre of mass is not a physical object, merely a mathematical artifice. One can buy a bag full of marbles but one cannot buy a bag full of centres of masses. The infinitely dense point-mass singularity of the black hole is a fiction, an oxymoron. Thus the black hole again is not predicted by General Relativity and it does not exist.

Let us now consider the expression for the so-called ‘Schwarzschild radius’; it is given by,

$$r = 2Gm/c^2$$

If we solve this for c we get, $c = \sqrt{2Gm/r}$.

We immediately recognize this as Newton’s expression for escape velocity. It is from this result that the proponents of the black hole claim that the ‘escape velocity’ of a black hole is c , the speed of light in vacuum. But in Newton’s expression r is a true radius, but not so in the Hilbert solution. Furthermore, this is an implicit two-body relation: one body escapes from another body. But Hilbert’s solution is alleged to relate to a universe that contains only one mass. It is impossible for an implicit Newtonian two-body relation to rightly appear in what is alleged to be a solution for a non-Newtonian one mass universe. Moreover, the proponents of the black hole claim on the one hand by the above equation that the escape velocity of a black hole is that of light c in vacuum, but on the other hand claim that light cannot even LEAVE the black hole. Now if the escape velocity of a black hole is that of

light in vacuum, not only can light both leave and escape by the very definition of escape velocity, material objects can also leave the event horizon, but not escape, because, according to the Theory of Special Relativity, they can only have a velocity less than that of light in vacuum. This just means that if the black hole has an escape velocity then material bodies can in fact leave the black hole and eventually stop and fall back to the black hole, just like a ball thrown into the air here on Earth with an initial velocity less than the escape velocity for the Earth. However, as explained above, there can be no other material bodies present in a black hole universe because the alleged black hole universe contains only the black hole mass, so there are no material bodies present that can leave a black hole or fall into a black hole. Similarly there are no photons present in any alleged black hole universe since there is no electromagnetic radiation in any black hole universe. But escape velocity by its very definition does not mean that nothing can leave, only that bodies cannot escape if the velocity of projection is less than the escape velocity. So the claims made for the black hole are contradictory. Thus, the notion of ‘escape velocity’ of a black hole is totally meaningless, and is nothing but a play on the words ‘escape velocity’ (McVittie, G. C., Laplace's alleged “black hole”. *The Observatory*, v.98, 272, 1978, www.sjcrothers.plasmaresources.com/McVittie.pdf). Indeed, in the Dictionary of Geophysics, Astrophysics and Astronomy (Dictionary of Geophysics, Astrophysics, and Astronomy, Edited by Richard A. Matzner, CRC Press LLC, Boca Raton, USA, 2001, http://www.4shared.com/get/DYuEHhd3/dictionary_of_geophysics_astro.html) one finds the following assertions:

“black hole: A region of spacetime from which the escape velocity exceeds the velocity of light. In Newtonian gravity the escape velocity from the gravitational pull of a spherical star of mass M and radius R is

$$v(\text{esc}) = \sqrt{2GM/R},$$

where G is Newton’s constant. Adding mass to the star (increasing M), or compressing the star (reducing R) increases $v(\text{esc})$. When the escape velocity exceeds the speed of light c , even light cannot escape, and the star becomes a black hole. The required radius $R(\text{BH})$ follows from setting $v(\text{esc})$ equal to c :

$$R(\text{BH}) = 2GM/c^2.”$$

... “In General Relativity for spherical black holes (Schwarzschild black holes), exactly the same expression $R(\text{BH})$ holds for the surface of a black hole. The surface of a black hole at $R(\text{BH})$ is a null surface, consisting of those photon trajectories (null rays) which just do not escape to infinity. This surface is also called the black hole horizon.”

According to Chandrasekhar (Chandrasekhar, S., *The increasing role of general relativity in astronomy*, *The Observatory*, 92, 168, 1972),

“Let me be more precise as to what one means by a black hole. One says that a black hole is formed when the gravitational forces on the surface become so strong that light cannot escape from it. ... A trapped surface is one from which light cannot escape to infinity.”

“The problem we now consider is that of the gravitational collapse of a body to a volume so small that a trapped surface forms around it; as we have stated, from such a surface no light can emerge.”

Note the contradiction in Chandrasekhar’s assertions.

According to Hawking (Hawking, S. W., *The Theory of Everything, The Origin and Fate of the Universe*; New Millennium Press, Beverly Hills, CA., 2002),

“I had already discussed with Roger Penrose the idea of defining a black hole as a set of events from which it is not possible to escape to a large distance. It means that the boundary of the black hole, the event horizon, is formed by rays of light that just fail to get away from the black hole. Instead, they stay forever hovering on the edge of the black hole.”

Note the contradiction in Hawking’s assertions.

Taylor and Wheeler [Taylor, E. F. and Wheeler, J. A. *Exploring Black Holes - Introduction to General Relativity*, Addison Wesley Longman, 2000 (in draft)] assert,

“... Einstein predicts that nothing, not even light, can be successfully launched outward from the horizon ... and that light launched outward EXACTLY at the horizon will never increase its radial position by so much as a millimeter.”

Note again the contradiction in the assertions of Taylor and Wheeler.

It is also routinely asserted that the theoretical Michell-Laplace Dark Body of Newton’s theory, which has an escape velocity = c , is a kind of black hole or that Newton’s theory somehow predicts “the radius of a black hole” [Taylor, E. F. and Wheeler, J. A. *Exploring Black Holes - Introduction to General Relativity*, Addison Wesley Longman, 2000 (in draft)].

Hawking remarks (Hawking, S. W., *The Theory of Everything, The Origin and Fate of the Universe*; New Millennium Press, Beverly Hills, CA., 2002),

“On this assumption a Cambridge don, John Michell, wrote a paper in 1783 in the *Philosophical Transactions of the Royal Society of London*. In it, he pointed out that a star that was sufficiently massive and compact would have such a strong gravitational field that light could not escape. Any light emitted from the surface of the star would be dragged back by the star’s gravitational attraction before it could get very far. Michell suggested that there might be a large number of stars like this. Although we would not be able to see them because light from them would not reach us, we could still feel their gravitational attraction. Such objects are what we now call black holes, because that is what they are – black voids in space.”

In the *Cambridge Illustrated History of Astronomy* (The Cambridge Illustrated History of Astronomy, Edited by Michael Hoskin, Cambridge University Press, Cambridge, UK, 1997) it is asserted that,

“Eighteenth-century speculators had discussed the characteristics of stars so dense that light would be prevented from leaving them by the strength of their gravitational attraction; and according to Einstein’s General Relativity, such bizarre objects (today’s ‘black holes’) were theoretically possible as end-products of stellar evolution, provided the stars were massive enough for their inward gravitational attraction to overwhelm the repulsive forces at work.”

According to Chandrasekhar (Chandrasekhar, S., *The increasing rôle of general relativity in astronomy*, *The Observatory*, 92, 168, 1972),

“That such a contingency can arise was surmised already by Laplace in 1798. Laplace argued as follows. For a particle to escape from the surface of a spherical body of mass M and radius R , it must be projected with a velocity v such that $(v^2)/2 > GM/R$; and it cannot escape if $v^2 < 2GM/R$. On the basis of this last inequality, Laplace concluded that if $R < 2GM/c^2 = R(s)$ (say) where c denotes the velocity of light, then light will not be able to escape from such a body and we will not be able to see it!”

“By a curious coincidence, the limit $R(s)$ discovered by Laplace is exactly the same that general relativity gives for the occurrence of the trapped surface around a spherical mass.”

But it is not surprising that General Relativity gives the same $R(s)$ “discovered by Laplace” because the Newtonian expression for escape velocity is deliberately and inadmissibly inserted post hoc by the relativists into Hilbert’s metric in order to make it so and to satisfy the deceptive words “outside a body”. Newton’s escape velocity does not drop out of any of the calculations to Hilbert’s metric.

Furthermore, although $Ric = 0$ is claimed to describe spacetime “outside a body”, Hilbert’s solution is nonetheless used to describe the interior of a black hole as well, since the black hole begins at the alleged ‘event horizon’, not at its alleged infinitely dense point-mass singularity, said to be at $r = 0$ in Hilbert’s solution, as explained above. We therefore see that the expression

$$r = 2GM/c^2$$

is the maximum radius of the theoretical Michell-Laplace Dark Body associated with Newton’s theory, not the ‘Schwarzschild radius’ of a black hole; and has nothing to do with the alleged black hole whatsoever.

Now the Michell-Laplace Dark Body dark body is not a black hole. The Michell-Laplace Dark Body possesses an escape velocity, whereas the black hole has no escape velocity. Objects can leave the Michell-Laplace Dark Body, but nothing can leave the black hole. There is no upper limit of the speed of a body in Newton’s theory, so masses can always escape from the Michell-Laplace Dark Body, provided they leave at or greater than the escape velocity. The Michell-Laplace Dark Body does not require irresistible gravitational collapse, whereas the black hole does. It has no infinitely dense point-mass singularity, whereas the black hole does. It has no event horizon, whereas the black hole does. There is always a class of observers that can see the Michell-Laplace Dark Body but there is no class of observers that can see the black hole (McVittie, G. C. Laplace's alleged “black hole”).

The Observatory, v.98, 272, 1978, www.sjcrothers.plasmasources.com/McVittie.pdf).

The Michell-Laplace Dark Body can persist in a space which contains other matter, including Michell-Laplace Dark Bodies, and interact with that matter, but the spacetime of the alleged black hole is devoid of other masses by mathematical construction and consequently cannot interact with anything. Thus, the Michell-Laplace Dark Body does not possess the characteristics of the alleged black hole and so it is not a black hole!

I remark that your assertion “Maybe there are no black holes: what that would show is that the General Relativistic Field equations are wrong” is incorrect, for the simple fact that nobody has ever found a black hole despite the now almost daily claims for them being found all over the place. General Relativity does not predict the black hole and the black hole does not exist. Recall that the black hole was allegedly obtained initially from General Relativity, not from observation for which a theory had to be developed. Observations are simply falsely interpreted in terms of a fictitious entity, the black hole. So the non-existence of the black hole does not invalidate General Relativity. What invalidates

General Relativity completely, and hence the Big Bang Cosmology and Einstein gravitational waves, is the fact that Einstein's field equations violate the usual conservation of energy and momentum and are therefore in conflict with experiment on a very deep level, despite the putative 'tests' alleged to validate the theory, as I have proven in my papers. The proof however requires some tensor analysis and so I will not give the proof herein, and refer you instead to my papers for the details. I can say however that owing to Einstein's invalid formulation of the conservation of energy and momentum for his gravitational field by means of his pseudo-tensor (Einstein, A., The Foundation of the General Theory of Relativity, Annalen der Physik, 49, 1916, section 17), which is easily proven to be a meaningless concoction of mathematical symbols, his field equations must take the following form:

$$G_{uv}/k + T_{uv} = 0$$

where the G_{uv}/k are the components of a gravitational energy tensor, from which it follows that the usual conservation laws are violated, from which there is no escape. Inclusion of the so-called 'Cosmological Constant' makes no difference. Thus, General Relativity collapses completely.

Also, for all I have discussed above I have provided detailed mathematical proofs in my papers, which are here:

http://vixra.org/author/stephen_j_crothers

Yours faithfully,
Stephen J. Crothers
9 October 2012

Professor White:

I write to advise you that I have received a pithy and rather pathetic reply from Professor Maudlin, which is appended below for your information.

There are a number of remarks that I would like to make in relation to Maudlin's ridiculous missive.

You will see that in his first paragraph he has stated that he has no intention of reading any of my papers, despite the fact that in my letter to him I provided him with detailed simple proofs that his claim that General Relativity predicts black holes is completely false and that his claim that if the black hole does not exist then General Relativity must be wrong is also entirely false. Furthermore, he fobs off all scientific arguments by saying this: "If you wish to have a proper referee's report on the quality of your work there is a standard procedure: send it to a refereed journal." I point out that I did not seek Maudlin's appraisal of my work or for him to provide a referee's report. Where in my to him email did I make such a request of him? Nowhere! So why does he make this irrelevant comment? My email was to prove to him that his claims about black holes and General Relativity, which he conveyed to you, are demonstrably false. You will note in his reply to me that he fails to address a single scientific issue contained in my email to him. He has therefore merely evaded the scientific issues completely by irrelevant talk about consumption of time and refereeing of papers, which also has nothing to do with the price of fish. Moreover, most of my papers are actually published in refereed journals, as you well know. I have no need whatsoever of Maudlin's appraisal of my papers, since I know more about the subject than him. Furthermore, aren't we all just as busy as Maudlin with our own scientific and intellectual work, or even busier than he? Nonetheless I put aside my own scientific work and

expended considerable time to provide him with proofs of the invalidity of his claims on black holes and General Relativity, in a thoroughly scholarly fashion with considerable quotation and citation from the literature, which he has evidently chosen to entirely ignore. Where in this correspondence has Maudlin applied the scientific method?

Maudlin also remarks in his reply to me, "For your information, comment on the quality of someone's work is not in any way an Ad Hominem argument. You do not seem to understand what that phrase means." This is deflective doubletalk. Recall that in his email to you, Maudlin said this: "I looked quickly at one of Mr Crothers papers, and what I read was wildly inaccurate. Furthermore, the claims are certainly not presented in a proper scholarly way, and I will not devote my time to them. I would not suggest that you do either." This is merely a veiled attempt to discredit me on matters concerning my person, not my scientific arguments. Anybody can see through Maudlin's remarks, just as you did. After all, he uttered not a word to you on the scientific content of the one unidentified paper of mine he alleged to have briefly looked at. How can Maudlin claim to "...comment on the quality of someone's work" when by his own admission to you he did not even read any of my papers but merely "looked quickly at one" of my papers? Recall also that in my email to Maudlin I said this: "Your remark borders upon the Ad Hominem and, ipso facto, also carries no scientific weight whatsoever." Thus Maudlin's accusation that I "...do not seem to understand" what Ad Hominem means is unbridled rubbish, and totally irrelevant to the scientific matters under discussion in any event.

His final comment is very telling. He says, "I have no intention of spending any more of my time on this, so do not bother to reply." Evidently the kitchen is now too hot for him.

And all this vacuous claptrap comes from a man who is a university professor mind you. Where is his application of scientific method in all this? Did it disappear down one of his fictitious 'black holes'? One can only wonder!

You have read my email to Maudlin and it speaks for itself. Maudlin has merely resorted to silence instead of scientific discourse. He clearly flatly refuses to acknowledge the arguments presented in my email to him that prove his claims on black holes and General Relativity totally false. Let us not forget that this professor has recently published a book, as you have noted, in which he propounds the usual falsehoods concerning black holes and General Relativity and no doubt he expects people to buy his book and take a lot of time to read it. And what will his readers 'learn' from his book when he himself disregards the scientific facts presented to him? Absolutely nothing!

Kind regards,
Steve Crothers.

PS. I note that you did not disclose to Maudlin that you are a university qualified philosopher yourself. It seems that he thought he was preaching to cannibals when he replied to your emails.

From: Tim Maudlin
Mr. Stephen Crothers,

Dear Sir,

Mr. White politely wrote to me to ask my opinion about something. I took as much time as I deemed sufficient and answered him. I did not undertake to read your collected works or comment on them, and I have no intention to. When I agree to referee a paper for a journal I read it carefully and prepare detailed remarks. It is a difficult and time-consuming process. I am under no obligation to agree to this

when a journal asks, and am certainly under no obligation with respect to e-mails that are sent to me out of the blue. If you wish to have a proper referee's report on the quality of your work there is a standard procedure: send it to a refereed journal.

For your information, comment on the quality of someone's work is not in any way an Ad Hominem argument. You do not seem to understand what that phrase means.

I have no intention of spending any more of my time on this, so do not bother to reply.

Regards,

Tim Maudlin