# The Black Hole, the Big Bang: A Cosmology in Crisis

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The black hole and the Big Bang cosmology have no valid basis in science. It is demonstrated herein that Einstein's field equations violate the usual conservation of energy and momentum and therefore violate the well established experimental results. This fact alone proves the invalidity of the black hole and the Big Bang cosmology. This paper is a shortened version of a more detailed analysis which can be obtained at www.sjcrothers.plasmaresources.com/BB.pdf.

## 1. Introduction

It is often claimed that cosmology became a true scientific inquiry with the advent of the General Theory of Relativity. A few subsequent putative observations have been misconstrued in such a way as to support the prevailing Big Bang model by which the Universe is alleged to have burst into existence from an infinitely dense point-mass singularity. Yet it can be shown that the General Theory of Relativity and the Big Bang model are in conflict with well-established experimental facts.

Black holes are not without cosmological significance in view of the many claims routinely made for them, and so they are treated herein. But the theory of black holes is riddled with contradictions and has no valid basis in observation. Nobody has ever found a black hole, even though claims for their discovery are now made on an almost daily basis. Nobody has ever found an infinitely dense point-mass singularity and nobody has ever found an event horizon, the tell-tale signatures of the black hole, and so nobody has ever found a black hole. In actuality, astrophysical scientists merely claim that there are phenomena observed about a region that they cannot see and so they illogically conclude that the unseen region must be a black hole, simply because they believe in black holes. In this way they can and do claim the presence of a black hole as they please. But that is not how science is properly done. Moreover, all black hole solutions pertain to one alleged mass in the Universe, whereas there are no known solutions to Einstein's field equations for two or more masses, such as two black holes, and no existence theorem by which it can even be asserted that Einstein's field equations contain latent solutions for multiple masses. In other words, the astrophysics community has no solution to Einstein's field equations that can account for the presence of two or more bodies, yet they claim the existence and discovery of black holes in multitudes, interacting with one another and other matter.

Owing to the very serious problems with the Big Bang hypothesis and the theory of black holes, it is fair to say that neither meets the requirements of a valid physical theory. They are products of a peer review system that has gone awry, having all the characteristics of a closed academic club of mutual admiration and benefit into which new members are strictly by invitation only. The upshot of this is that the majority of the current astrophysics community is imbued with the dogmas of the academic club and the voice of dissent conveniently ignored or ridiculed, contrary to the true spirit of scientific inquiry. This method has protected funding interests but has done much harm to science.

## 2. Einstein's Field Equations

According to Einstein, matter is the cause of the gravitational field and the causative matter is described in his theory by a mathematical object called the energy-momentum tensor, which is coupled to geometry (i.e. spacetime) by his field equations, so that matter causes spacetime curvature (his gravitational field) and spacetime constrains motion of matter when gravity alone acts. According to the astrophysics community, Einstein's field equations,

"*... couple the gravitational field (contained in the curvature of spacetime) with its sources.*" [1]

"*Since gravitation is determined by the matter present, the same must then be postulated for geometry, too. The geometry of space is not given a priori, but is only determined by matter.*" [2]

"*Again, just as the electric field, for its part, depends upon the charges and is instrumental in producing mechanical interaction between the charges, so we must assume here that the metrical field (or, in mathematical language, the tensor with components $g_{ik}$ ) is related to the material filling the world.*" [3]

"*... we have, in following the ideas set out just above, to discover the invariant law of gravitation, according to which matter determines the components $\Gamma^{\alpha}_{\beta\iota}$ of the gravitational field, and which replaces the Newtonian law of attraction in Einstein's Theory.*" [3]

"*Thus the equations of the gravitational field also contain the equations for the matter (material particles and electromagnetic fields) which produces this field.*" [4]

"*Clearly, the mass density, or equivalently, energy density $\rho(\vec{x},t)$ must play the role as a source. However, it is the 00 component of a tensor $T_{\mu\nu}(x)$, the mass-energy-momentum distribution of matter. So, this tensor must act as the source of the gravitational field.*" [5]

"*In general relativity, the stress-energy or energy-momentum tensor $T^{ab}$ acts as the source of the gravitational field. It is related to the Einstein tensor and hence to the curvature of spacetime via the Einstein equation.*" [6]

"*Mass acts on spacetime, telling it how to curve. Spacetime in turn acts on mass, telling it how to move.*" [7]

Qualitatively Einstein's field equations are:

$$\text{Spacetime geometry} = -\kappa \times \text{causative matter}$$

where *causative matter* is described by the energy-momentum tensor and $\kappa$ is a constant. The *spacetime geometry* is described by a mathematical object called Einstein's tensor, $G_{\mu\nu}$, ($\mu$, $\nu$ = 0, 1, 2, 3) and the energy-momentum tensor is $T_{\mu\nu}$. Einstein's field equations are therefore[1]:

$$G_{\mu\nu} = R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} = -\kappa T_{\mu\nu} \tag{2.1}$$

$R_{\mu\nu}$ is called the Ricci tensor and $R$ the Ricci curvature. If $T_{\mu\nu} = 0$ then one finds that $R = 0$ and this expression allegedly reduces to

$$R_{\mu\nu} = 0 \tag{2.2}$$

and describes a universe that contains no matter.

In the transition from Minkowski spacetime of Special Relativity to Schwarzschild spacetime for the black hole, matter is not involved. The speed of light $c$ that appears in the Minkowski spacetime line-element is a speed, not a photon. For this speed to be assigned to a photon, the photon must be present *a priori*. Similarly, for the relations of Special Relativity to hold, multiple arbitrarily large finite masses must also be present *a priori*. Minkowski spacetime is not Special Relativity because the latter requires the presence of matter, whereas the former does not. Similarly, the presence of the constant $c$ in the line-element for Schwarzschild spacetime does not mean that a photon is present. The transition from Minkowski spacetime to Schwarzschild spacetime is thus not a generalisation of Special Relativity at all, merely a generalisation of the geometry of Minkowski spacetime. In the usual derivation of Schwarzschild spacetime, mass is included by means of a sophistic argument, viz. $R_{\mu\nu} = 0$ describes the gravitational field "outside a body". When one inquires of the astrophysics community as to what is the source of this alleged gravitational field "outside a body", one is told that it is *the body*, in which case the body must be described by a non-zero energy-momentum tensor since Einstein's field equations "… *couple the gravitational field … with its sources*" [1]. Dirac [8] tells us that

"…*the constant of integration m that has appeared … is just the mass of the central body that is producing the gravitational field.*"

We are told by Einstein [9] that

"… *M denotes the sun's mass centrally symmetrically placed about the origin of coordinates.*"

According to Weyl, [10]

"… *the quantity $m_o$ introduced by the equation $m=km_o$ occurs as the field-producing mass in it; we call m the gravitational radius of the matter causing the disturbances of the field.*"

Foster and Nightingale [1] assert that

"…*the corresponding Newtonian potential is $V = -GM/r$ , where M is the mass of the body producing the field, and G is the gravitational*

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¹ The so-called "cosmological constant" is not included.

*constant … we conclude that $k = -2GM/c^2$ and Schwarzschild's solution for the empty space outside a spherical body of mass M is …*"

After the "Schwarzschild solution" (which is not in fact Schwarzschild's solution at all) is obtained, there is no matter present. This is because the energy-momentum tensor is set to zero and Minkowski spacetime is not Special Relativity. The astrophysics community merely inserts (Weyl says "*introduced*") mass and photons by erroneously appealing to Newton's theory through which they also get any number of masses and any amount of radiation by applying the Principle of Superposition. This is done despite the fact that the Principle of Superposition does not apply in General Relativity. However, Newton's relations involve two bodies and the Principle of Superposition. Conversely, $R_{\mu\nu} = 0$ contains *no bodies* and cannot accommodate the Principle of Superposition. The astrophysics community removes all matter on the one hand by setting $R_{\mu\nu} = 0$ and then puts it back in at the end with the other hand by means of Newton's theory. The whole procedure constitutes a violation of elementary logic.

Einstein asserted that his Principle of Equivalence and his laws of Special Relativity must hold in sufficiently small regions of his gravitational field, and that these regions can be located anywhere in his gravitational field. Here is what Einstein [9] said in 1954, the year before his death:

"*Let now K be an inertial system. Masses which are sufficiently far from each other and from other bodies are then, with respect to K, free from acceleration. We shall also refer these masses to a system of co-ordinates K′, uniformly accelerated with respect to K. Relatively to K′ all the masses have equal and parallel accelerations; with respect to K′ they behave just as if a gravitational field were present and K′ were unaccelerated. Overlooking for the present the question as to the 'cause' of such a gravitational field, which will occupy us later, there is nothing to prevent our conceiving this gravitational field as real, that is, the conception that K′ is 'at rest' and a gravitational field is present we may consider as equivalent to the conception that only K is an 'allowable' system of co-ordinates and no gravitational field is present. The assumption of the complete physical equivalence of the systems of coordinates, K and K′, we call the 'principle of equivalence'; this principle is evidently intimately connected with the law of the equality between the inert and the gravitational mass, and signifies an extension of the principle of relativity to co-ordinate systems which are in non-uniform motion relatively to each other. In fact, through this conception we arrive at the unity of the nature of inertia and gravitation. For, according to our way of looking at it, the same masses may appear to be either under the action of inertia alone (with respect to K) or under the combined action of inertia and gravitation (with respect to K′).*

"*Stated more exactly, there are finite regions, where, with respect to a suitably chosen space of reference, material particles move freely without acceleration, and in which the laws of special relativity, which have been developed above, hold with remarkable accuracy.*"

In their textbook, Foster and Nightingale [1] succinctly state the Principle of Equivalence thus:

"*We may incorporate these ideas into the principle of equivalence, which is this: In a freely falling (nonrotating) laboratory occupying a*

small region of spacetime, the laws of physics are the laws of special relativity."

According to Pauli [2],

"*We can think of the physical realization of the local coordinate system $K_0$ in terms of a freely floating, sufficiently small, box which is not subjected to any external forces apart from gravity, and which is falling under the influence of the latter. ... It is evidently natural to assume that the special theory of relativity should remain valid in $K_0$.*"

Taylor and Wheeler state in their book [11],

"*General Relativity requires more than one free-float frame.*"

Carroll and Ostlie write [7],

"***The Principle of Equivalence****: All local, freely falling, nonrotating laboratories are fully equivalent for the performance of all physical experiments. … Note that special relativity is incorporated into the principle of equivalence. … Thus general relativity is in fact an extension of the theory of special relativity.*"

In the Dictionary of Geophysics, Astrophysics and Astronomy [12],

"*Near every event in spacetime, in a sufficiently small neighborhood, in every freely falling reference frame all phenomena (including gravitational ones) are exactly as they are in the absence of external gravitational sources.*"

Note that the Principle of Equivalence involves the *a priori* presence of multiple arbitrarily large finite masses. Similarly, the laws of Special Relativity involve the *a priori* presence of at least two arbitrarily large finite masses (and at least one photon); for otherwise relative motion between two bodies cannot manifest. The postulates of Special Relativity are themselves couched in terms of inertial systems, which are in turn defined in terms of mass via Newton's First Law of motion. "Schwarzschild's solution" (and indeed all black hole "solutions"), pertains to one alleged mass in a universe that contains no other masses. According to the astrophysics community, "Schwarzschild" spacetime consists of one mass in an otherwise *totally empty universe*, and so its alleged black hole is the only matter present - it has nothing to interact with, including "observers" (on the assumption that any observer is material).

In the space of Newton's theory of gravitation, one can insert into space as many masses as desired. Although solving for the gravitational interaction of these masses rapidly becomes intractable, there is nothing to prevent us inserting masses conceptually. This is essentially the Principle of Superposition. However, one cannot do this in General Relativity, because Einstein's field equations are non-linear. In General Relativity, each and every configuration of matter must be described by a corresponding energy-momentum tensor and the field equations solved separately for each and every configuration, because matter and geometry are coupled, as eq. (2.1) describes. This is not the case in Newton's theory, where geometry is independent of matter. The Principle of Superposition does not apply in General Relativity:

"*In a gravitational field, the distribution and motion of the matter producing it cannot at all be assigned arbitrarily --- on the contrary it must be determined (by solving the field equations for given initial*

conditions) *simultaneously with the field produced by the same matter.*" [4]

"*An important characteristic of gravity within the framework of general relativity is that the theory is nonlinear. Mathematically, this means that if $g_{ab}$ and $\gamma_{ab}$ are two solutions of the field equations, then $ag_{ab} + b\gamma_{ab}$ (where a, b are scalars) may not be a solution. This fact manifests itself physically in two ways. First, since a linear combination may not be a solution, we cannot take the overall gravitational field of the two bodies to be the summation of the individual gravitational fields of each body.*" [6]

The astrophysics community claims that the gravitational field "outside" a mass contains no matter, and thereby asserts that the energy-momentum tensor $T_{\mu\nu} = 0$. Despite this, it is routinely alleged that there is only one mass in the whole Universe with this particular problem statement. But setting the energy-momentum tensor to zero means that there is no matter present by which the gravitational field can be caused! As we have seen, when the energy-momentum tensor is set to zero, it is also claimed that the field equations then reduce to the much simpler form,

$$Ric = R_{\mu\nu} = 0$$

"*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.*" [12]

However, since this is a spacetime that *by construction* contains no matter, Einstein's Principle of Equivalence and his laws of Special Relativity cannot manifest, thus violating the physical requirements of the gravitational field. It has never been proven that Einstein's Principle of Equivalence and his laws of Special Relativity, both of which are defined in terms of the *a priori* presence of multiple arbitrary large finite masses and photons, can manifest in a spacetime that *by construction* contains no matter. Now the "Schwarzschild solution" relates to eq. (2.2). However, there is allegedly mass present, denoted by *m* in the "Schwarzschild solution". This mass is not described by an energy-momentum tensor. The reality that the *post hoc* mass *m* is responsible for the alleged gravitational field due to a black hole associated with the "Schwarzschild solution" is confirmed by the fact that if $m = 0$, the "Schwarzschild solution" reduces to Minkowski spacetime, and hence no gravitational field according to the astrophysics community. If not for the presence of the alleged mass *m* in the "Schwarzschild solution" there would be no cause of their gravitational field. But this contradicts Einstein's relation between geometry and matter, since *m* is introduced into the "Schwarzschild solution" *post hoc*, not via an energy-momentum tensor describing the matter causing the associated gravitational field.

In Schwarzschild spacetime, the components of the metric tensor are only functions of one another, and reduce to functions of just one component of the metric tensor. None of the components of the metric tensor contain matter, because the energy-momentum tensor is zero. There is no transformation of matter in Minkowski spacetime into Schwarzschild spacetime, and so

the laws of Special Relativity are not transformed into a gravitational field by $Ric = 0$. The transformation is merely from a pseudo-Euclidean geometry containing no matter into a pseudo-Riemannian (non-Euclidean) geometry containing no matter. Matter is introduced into the spacetime of $Ric = 0$ by means of a vicious circle, as follows. It is stated at the outset that $Ric = 0$ describes spacetime "outside a body". The words "outside a body" introduce matter, contrary to the energy-momentum tensor, $T_{\mu\nu} = 0$, that describes the causative matter as being absent. There is no matter involved in the transformation of Minkowski spacetime into Schwarzschild spacetime via $Ric = 0$, since the energy-momentum tensor is zero, making the components of the resulting metric tensor functions solely of one another, and reducible to functions of just one component of the metric tensor. To satisfy the initial claim that $Ric = 0$ describes spacetime "outside a body", so that the resulting spacetime curvature is caused by the alleged mass present, the alleged causative mass is *inserted* into the resulting metric *ad hoc*. This is achieved by means of a contrived analogy with Newton's theory and his expression for escape velocity (a *two-body* relation in what is alleged to be a one-body problem), thus closing the vicious circle. Here is how Chandrasekhar [13] presents the vicious circle:

"*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 (apparently) gives the same $R_s$ "*discovered by Laplace*" because the Newtonian expression for escape velocity is deliberately inserted *post hoc* by the astrophysicists and astronomers, into the "Schwarzschild solution". Newton's escape velocity does not drop out of any of the calculations to Schwarzschild spacetime. Furthermore, although $R_{\mu\nu} = 0$ is said to describe spacetime "outside a body", the resulting metric is nonetheless used to describe the *interior* of a black hole, since the black hole begins at the alleged "event horizon", not at its infinitely dense point-mass singularity (allegedly at $r = 0$ in the "Schwarzschild solution").

## 3. Consequences of $R_{\mu\nu} = 0$

Since $R_{\mu\nu} = 0$ cannot describe Einstein's gravitational field, Einstein's field equations cannot reduce to $R_{\mu\nu} = 0$ when $T_{\mu\nu} = 0$. In other words, if $T_{\mu\nu} = 0$ (i.e. there is no matter present) then there is no gravitational field. Consequently Einstein's field equations must take the form [15],

$$\frac{G_{\mu\nu}}{\kappa} + T_{\mu\nu} = 0 \tag{3.1}$$

The $G_{\mu\nu}/\kappa$ are the components of a gravitational energy tensor. Thus the total energy of Einstein's gravitational field *is always zero*; the $G_{\mu\nu}/\kappa$ and the $T_{\mu\nu}$ must vanish identically; there is *no possibility* for the localization of gravitational energy (i.e. *there are no Einstein gravitational waves*). This also means that Einstein's gravitational field violates the experimentally well-established usual conservation of energy and momentum [2]. Since there is no experimental evidence that the usual conservation of energy and momentum is invalid, Einstein's General Theory of Relativity violates the experimental evidence, and so it is invalid.

In an attempt to circumvent the foregoing conservation problem, Einstein invented his gravitational pseudo-tensor, the components of which he says are '*the "energy components" of the gravitational field*' [15]. His invention had a two-fold purpose (a) to bring his theory into line with the usual conservation of energy and momentum, (b) to enable him to get gravitational waves that propagate with speed *c*. First, Einstein's gravitational pseudo-tensor is not a tensor, and is therefore not in keeping with his theory that all equations be tensorial. Second, he constructed his pseudo-tensor in such a way that it behaves like a tensor in one particular situation, that in which he could get gravitational waves with speed *c*. Now Einstein's pseudo-tensor is claimed to represent the energy and momentum of the gravitational field and it is routinely applied in relation to the localization of gravitational energy, the conservation of energy and the flow of energy and momentum.

Dirac [8] pointed out that,

"*It is not possible to obtain an expression for the energy of the gravitational field satisfying both the conditions: (i) when added to other forms of energy the total energy is conserved, and (ii) the energy within a definite (three dimensional) region at a certain time is independent of the coordinate system. Thus, in general, gravitational energy cannot be localized. The best we can do is to use the pseudotensor, which satisfies condition (i) but not condition (ii). It gives us approximate information about gravitational energy, which in some special cases can be accurate.*"

On gravitational waves Dirac [8] says,

"*Let us consider the energy of these waves. Owing to the pseudo-tensor not being a real tensor, we do not get, in general, a clear result independent of the coordinate system. But there is one special case in which we do get a clear result; namely, when the waves are all moving in the same direction.*"

About the propagation of gravitational waves Eddington [16] remarked $\left( g_{\mu\nu} = \delta_{\mu\nu} + h_{\mu\nu} \right)$,

$$\frac{\partial^2 h_{\mu\nu}}{\partial t^2} - \frac{\partial^2 h_{\mu\nu}}{\partial x^2} - \frac{\partial^2 h_{\mu\nu}}{\partial y^2} - \frac{\partial^2 h_{\mu\nu}}{\partial z^2} = 0$$

"*... showing that the deviations of the gravitational potentials are propagated as waves with unit velocity, i.e. the velocity of light. But it must be remembered that this representation of the propagation, though always permissible, is not unique. ... All the coordinate-systems differ from Galilean coordinates by small quantities of the first order. The potentials $g_{\mu\nu}$ pertain not only to the gravitational influence which is objective reality, but also to the coordinate-system which we select arbi-*

trarily. We can 'propagate' coordinate-changes with the speed of thought, and these may be mixed up at will with the more dilatory propagation discussed above. There does not seem to be any way of distinguishing a physical and a conventional part in the changes of the $g_{\mu\nu}$.

"*The statement that in the relativity theory gravitational waves are propagated with the speed of light has, I believe, been based entirely upon the foregoing investigation; but it will be seen that it is only true in a very conventional sense. If coordinates are chosen so as to satisfy a certain condition which has no very clear geometrical importance, the speed is that of light; if the coordinates are slightly different the speed is altogether different from that of light. The result stands or falls by the choice of coordinates and, so far as can be judged, the coordinates here used were purposely introduced in order to obtain the simplification which results from representing the propagation as occurring with the speed of light. The argument thus follows a vicious circle.*"

Now Einstein's pseudo-tensor, $\sqrt{-g}\, t_\nu^\mu$, is defined by,

$$\sqrt{-g}\, t_\nu^\mu = \frac{1}{2}\left[ \delta_\nu^\mu L - \left( \frac{\partial L}{\partial g_{,\mu}^{\sigma\beta}} \right) g_{,\nu}^{\sigma\beta} \right] \qquad (3.2)$$

where $L$ is given by

$$L = -g^{\alpha\beta}\left( \Gamma_{\alpha\kappa}^\gamma \Gamma_{\beta\gamma}^\kappa - \Gamma_{\alpha\beta}^\gamma \Gamma_{\gamma\kappa}^\kappa \right) . \qquad (3.3)$$

According to Einstein [15] his pseudo-tensor "*expresses the law of conservation of momentum and of energy for the gravitational field.*"

In a remarkable paper published in 1917, T. Levi-Civita [14] provided a clear and rigorous proof that Einstein's pseudo-tensor is meaningless, and therefore any argument relying upon it is fallacious. I repeat Levi-Civita's proof. Contracting eq. (3.2) produces a linear invariant, thus

$$\sqrt{-g}\, t_\mu^\mu = \frac{1}{2}\left[ 4L - \left( \frac{\partial L}{\partial g_{,\mu}^{\sigma\beta}} \right) g_{,\mu}^{\sigma\beta} \right] \qquad (3.4)$$

Since $L$ is, according to eq. (3.3), quadratic and homogeneous with respect to the Riemann-Christoffel symbols, and therefore also with respect to $g_{,\mu}^{\sigma\beta}$, one can apply Euler's theorem to obtain (also see [16]),

$$\left( \frac{\partial L}{\partial g_{,\mu}^{\sigma\beta}} \right) g_{,\mu}^{\sigma\beta} = 2L \qquad (3.5)$$

Substituting expression (3.5) into expression (3.4) yields the linear invariant as $L$. This is a first-order, intrinsic differential invariant, i.e. it depends only on the components of the metric tensor and their first derivatives (see expression (3.3) for $L$). However, the mathematicians G. Ricci-Curbastro and T. Levi-Civita [14] proved, in 1900, that such invariants *do not exist*. This is sufficient to render Einstein's pseudo-tensor entirely meaningless, and hence all arguments relying on it false. Consequently, Einstein's conception of the conservation of energy and momentum in the gravitational field is erroneous.

Linearization of Einstein's field equations and associated perturbations has been popular. "*The existence of exact solutions corresponding to a solution to the linearised equations must be investigated before perturbation analysis can be applied with any reliability.*"

[17]. Unfortunately, the astrophysical scientists have not properly investigated. Indeed, linearisation of the field equations is inadmissible, even though the astrophysical scientists write down linearised equations and proceed as though they are valid, because linearisation of the field equations implies the existence of a tensor which, except for the trivial case of being precisely zero, *does not otherwise exist*; proven by the German mathematician Hermann Weyl [18] in 1944.

Over a period of some 40 years and at great monetary expense, the international search for Einstein's gravitational waves has detected nothing. This is not surprising – the search for these waves is destined to detect none.

It follows from $R_{\mu\nu} = 0$ that not only is the black hole invalid but so too is the Big Bang and the associated expansion of the Universe. The violation of the usual conservation of energy and momentum cannot be circumvented in order to save General Relativity from the dustbin of scientific history.

## 4. The Cosmic Microwave Background

It is now well known that the ubiquitous radiation at ~2.7 K discovered in 1965 by Penzias and Wilson [19] is said to be the afterglow of the birth of the Universe – the Big Bang. This notion has found its way into the popular press and even high school textbooks. It is routinely claimed that this afterglow is associated with an expansion of the Universe from a primordial singularity, predicted by Einstein's General Theory of Relativity. This alleged afterglow is usually referred to as the Cosmic Microwave Background (CMB).

The so-called expansion of the Universe is further alleged to be validated by the Hubble-Humason relation. However, Hubble and Humason, building upon the observational work of Slipher, proposed red-shift in spectra with distance, not a red-shift with recessional velocity. The former has been reinterpreted as the latter in order to forge a correspondence with theory. The Big Bang was spawned by theory, not observation, and has found no definite physical support.

The history of the temperature of the Universe is rather chequered. Mitchell [20] relates that Dicke predicted a temperature of 20 K, in 1946, a figure he revised to 40 K in the 1960's, and later to 45 K. Peebles, a colleague of Dicke, changed the temperature to approximately 10 K, which he later modified to ~3 K to agree with the findings of Penzias and Wilson. Gamow obtained by calculation a temperature of 50K which was, in 1948, revised to 5K by Alpher and Herman, both students of Gamow. About a year or so later Alpher and Herman changed it to 28 K.

Mitchell relates further that a number of scientists predicted a theoretical thermal background due to starlight without the influence of the General Theory of Relativity and the Big Bang dogma. The Noble prize winning chemist Walther Nernst gave 0.75 K in 1938. In 1926 Arthur Eddington proposed 3.2 K. Ernst Regener suggested 2.8 K in the 1930's, and astronomer Andrew McKellar 2.3 K in 1941. This thermal background, it is to be noted, was not attributed by these scientists to left-over radiation from cosmic genesis. All but for Penzias and Wilson are theoretical values according to a number of different theories, but it is the Big Bang interpretation that now prevails. It is claimed that the isotropic nature of the CMB detected by Penzias and Wilson

attests to its origin in a Big Bang. Interestingly, the theoretical values suggested without the Big Bang are closer to that detected by Penzias and Wilson.

That the theoretical temperature of the alleged afterglow has been revised so arbitrarily and so often gives cause at least for suspicion that it has no valid basis in science. Although the Big Bang and the expansion of the Universe are physically unproven they are generally regarded by a large number of astrophysical scientists as unquestionable, contrary to the very spirit of scientific inquiry. This unscientific method now pervades much of science; astrophysics and astronomy in particular. Despite evidence, both physical and theoretical, that the Big Bang and expansion are without scientific justification, astrophysics clings steadfastly to cherished theory on the unscientific basis that consensus can't be wrong. That the Big Bang and expansion of the Universe have taken hold of astrophysics is remarkable and reflects a serious decline in scientific thought.

Professor Pierre-Marie Robitaille of Ohio State University, a leading expert in imaging science, has shown conclusively, in a series of quite brilliant papers, [21-25] that the CMB has not been measured by the WMAP and COBE satellites. So riddled are they with design and data analysis flaws that neither satellite has contributed anything of value to science. He has also shown that the European Space Agency's Planck satellite is no better and predicts that Planck will find no signal at the second Lagrange point of the Sun-Earth system, where Planck is located. Moreover, Robitaille reassigns the CMB to the oceans of the Earth, pointing out that water is a powerful absorber and emitter in the microwave and far infrared, well known at sea in submarines and at home in microwave ovens, owing to the hydrogen bonds associated with water molecules. Emissions from the oceans are scattered by the atmosphere thereby producing an isotropic signal from an anisotropic source with a resulting temperature profile that does not reflect that of the source of the radiation (the oceans). It is this Earth emitted signal that Penzias and Wilson detected and which has tantalized astrophysics ever since.

That the Earth has not been reported to interfere with the instruments aboard WMAP and COBE is, according to Robitaille, precisely because the Earth is the source of the signal.

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