Quantized quasar redshifts in a creationist cosmology

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Quasars are very bright star-like objects with large redshifts and large variations in luminosity on timescales of months to days and even hours. Many quasars indicate association to galaxies which do not have large redshifts. Some astronomers thus question whether the large quasar redshift is truly related to distance (cosmological redshift). The inference of large distances creates a number of contradictory conclusions, including massive luminosity, excessively rapid rotation, and expansion of jets at greater than the speed of light.

The standard interpretation of a black hole source for quasars does not provide a satisfactory explanation. However, the measured redshift data for quasars, found close to spiral galaxies, exhibit a quantized structure, seen in their redshifts, which includes an intrinsic component. It has been suggested by some that the intrinsic redshift component is the result of the initial zero inertial-mass of newly created matter that has been ejected from the cores of active galactic nuclei.

Existing naturalistic models, big bang or steady state, cannot reconcile this low inertial-mass with laboratory observations of electron-positron pair creation. Only within a creationist model can these observations be reconciled. This is further evidence in support of a creationist cosmology, in which we are now observing, in the cosmos, the creation of the galaxies on Day 4 of Creation Week.

In an invited paper of the Publications of the Astronomical Society of the Pacific (2001), Geoffrey Burbidge wrote that:

> 'underlying all of the topics [in] the extragalactic universe and the physics of active galaxies are two basic beliefs which are widely held today: (1) cosmological evidence strongly suggests that the hot big bang cosmological model is generally correct and (2) redshifts of all objects outside our Galaxy are, apart from small velocity shifts due to local motions, cosmological in origin. In my view the general acceptance of these ideas and the subsequent edifice of models which has been erected around these ideas is a fundamental mistake. The direction that research will take in the 21st century, however, may well lead to a compounding of the mistake, and I predict no immediate return to reality.'[1]

I will show evidence that contradicts both of these beliefs and provides compelling evidence for a specially created universe.

What are quasars?

Ever since their discovery, quasars have been argued over, as to their origin and structure. The current standard paradigm in modern astrophysics is that quasars are systems of accreted matter around supermassive black holes. Quasars (quasi-stellar radio sources) or quasi-stellar objects (QSOs) are generally identified as star-like objects with large emission-line redshifts on a non-thermal continuum (the spectrum of radiation from the source cannot be described as originating from the thermal energy of the gases in its atmosphere, such as is found in normal stars, as our sun). Unfortunately, 'large' and 'star-like' are never adequately defined. Recently, many lower-redshift QSOs have also been identified, some with fuzz around their central nuclei. This in itself causes a problem for the usual interpretation, as fuzz (i.e. stars) should not be visible at the cosmological distances indicated by their redshifts and the Hubble Law.

The strength of the argument that the redshift of a quasar is cosmological in origin (a standard *belief* of astrophysics) rests firmly on the continuity of the properties of active galactic nuclei (AGNs) including Seyfert galaxies (spiral galaxies with active nuclei) and quasars.[2] The nuclei of Seyfert galaxies appear to have similar properties to quasars, but are found in the nearby region of space with relatively low redshifts. The standard view is that the fuzz of stars around the nuclei of very distant Seyfert galaxies is too dim, being outshone by the brightness of the nuclei, and they are thus identified as quasars. The astronomer Halton Arp, though not conventional by any means,[3] would also accept this standard view, but instead of interpreting quasars and AGNs, including Seyferts, as different manifestations of the same phenomenon, he suggests that they are similar objects at different stages of development. He describes the picture of quasars changing through many stages to become Seyfert galaxies and some ultimately becoming normal spiral galaxies.[4,5]

This paper reviews the published material on quasars, mostly observational data (in particular those quasars that have been found associated with low-redshift galaxies). It presents compelling evidence that these quasars have an intrinsic component to their redshifts, which cannot be explained by either cosmological expansion, gravitational or Doppler effects.[6] This means they are not really so

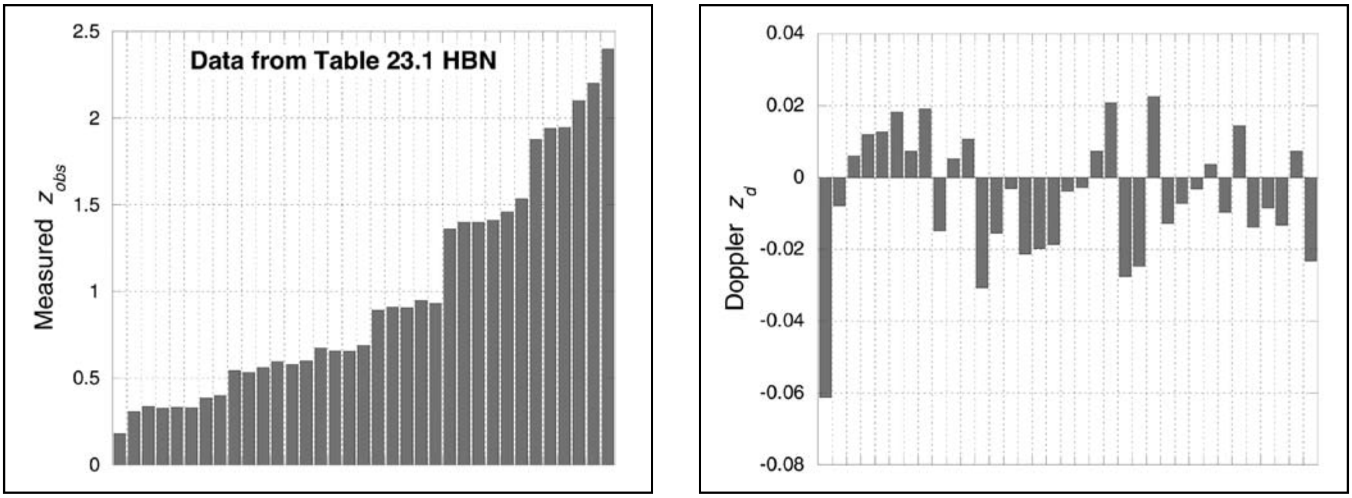

Figure 1. *(a) Distribution of the redshift values (z_{obs}) for 26 QSOs (from table 23.1 of ref. 18, p. 335). The data is sorted in increasing order of z_{obs}. Note the non-random groupings of the data as shown by the stepwise shape of the graph. (b) Distribution of the smaller-velocity Doppler z_d for the same data after equation (2) has been applied to the data of fig. 1(a) with the appropriate discrete values of z_i.*

far away, and thus the Hubble Law doesn't apply and the big bang paradigm has a serious flaw.[7] Finally, I propose the intrinsic component may in fact be the result of accumulating inertial-mass in the newly created material, as first suggested by Hoyle and Narlikar.[8] Thus, we may be seeing the light emission from Day 4 of Creation Week, when the flow of time on Earth was much slower than in the rest of the universe.[9]

Periodicity of QSO redshifts

Since the early 1960s, many papers[10–17] have been published claiming that QSO redshift values show a strange, discrete structure, particularly when it could be proven that they are also physically associated with nearby spiral galaxies. Historically, the first claim involved an abundance of QSOs and some similar emission-line objects with redshifts $0.056 \leq z \leq 0.065$. One paper by Burbidge[15] stated the redshifts of 89 out of the 560 low-redshift QSOs lay in this region (see fig. 1a of ref. 15). Other redshift peaks in measured QSOs and AGNs became apparent with z = 0.30, 0.60, 0.96, 1.41, 1.96, 2.63, 3.44 and 4.45. For a thorough review of the data, refer to chapters 11 and 23 of Hoyle *et al.*[18]

In 1971, Karlsson[19] showed peaks could be fitted to a discrete sequence such that

$$(1 + z_{n+1})/(1 + z_n) = 1.227, \qquad (1)$$

where *n* is a positive integer index, resulting in successive peaks at ❒$\log(1 + z) = 0.089$,[20] which has been referred to as a 'period' (or discrete function) of the index *n*. By 1977, with more than 600 QSOs identified, many redshifts were found lying close to these values. Some statistical analyses confirmed a periodicity[11–13,21] while others[22,23] have not found any significant period.

Claims that the periodicity observed is the result of selection effects due to optical filters[24] were shown by Burbidge[12] to be incorrect and are further disproved by the fact that, at least initially, the periodicities were identified predominantly from radio sources, which don't suffer from this problem.

The periodic redshift peaks are not observable in large, optically chosen samples of quasars, such as the 2dF QSO redshift survey, which involves a wide range of cosmological redshifts, as was presented by Hawkins *et al.*[23] Similarly, the large Sloan survey shows no periodicity. However, unless an independent method is available to select the correct cosmological redshift for a quasar, the periodicity is washed out. In Hawkins *et al.*,[23] close proximity (within 30 arcminutes of the centre of the nearby galaxy) was the criterion, but closer attention should be made to identify the parent galaxy. Different techniques need to be used as selection criteria, such as:

- sources identified in QSOs very close to active companion galaxies
- sources in binary or multiple QSO systems
- X-ray sources that are close to active galaxies that turn out to be QSOs
- sources initially identified by their radio emissions (3C and 3CR QSOs).[14,25]

Recent accurate redshift measurements of a number of gamma-ray-burst (GRB) sources have produced redshifts very close to the peak values of 0.96 and 3.44.[25] However, it is also worth noting that the current understanding of GRBs by most in the astronomical community is that they are due, at least in some cases, to supernovae.[26]

It is amazing that redshift histogram peaks can be seen at all. If the redshift data contain both a cosmological and an intrinsic component, the very existence of sharp peaks leads to the conclusion that the QSOs, with these redshifts, must be comparatively local objects. If there is a large cosmological component, any intrinsic component would be swamped in a sizeable sample of different galaxies at different redshift distances. By 1993, with more than 7,300 QSOs redshifts catalogued, the peaks were starting to be washed out. Hoyle *et al.*[18] explain this as a result of the redshifts being taken from sources with a wide range of redshift values (for which a reference cosmological component cannot be separated, as there are no physically associated galaxies) and the influence of identification of QSOs by optical methods, in which there are optical selection effects. However, strong peaks at 0.3, 1.41 and 1.96 remained noticeable.

Consider a QSO with an observed redshift (z_{obs}) described by three redshift components: cosmological (z_c), intrinsic (z_i) and Doppler (z_d). We can write:

$$(1 + z_{obs}) = (1 + z_c)(1 + z_i)(1 + z_d). \quad (2)$$

Only if the cosmological redshift is quite small would the peaks not be washed out in the distribution histograms. Thus $z_c << 1$ and $z_d << 1$ and $z_{obs} \approx z_i$. Hoyle *et al.*[18] lists a table (23.1 on p. 335 in ref. 18) of 26 QSOs and closely associated galaxies. See fig. 1(a). In these cases, (2) has been applied and the intrinsic (z_i) component extracted. In order to do this a small Doppler component resulting from the local motion of the QSO has been assumed. Its value is usually $|z_d| < 0.1c$. See fig. 1(b). Note that the very small data set shown in fig. 1 is for illustrative purposes only.

Big bang problems

Because of their high-redshift, the standard interpretation of QSOs is that they are very bright and at vast cosmological distances from Earth. If that assumption turns out to be incorrect, it puts the standard big bang interpretation, based on the Hubble Law, at risk. Furthermore, measurements that are made assuming the big bang paradigm to be correct are subject to error of this kind. For example, Webb's recent controversial measurement of the drift in the value of the fine-structure constant[27,28] has generated a flurry of new theories.[29,30] Webb measured absorption systems in front of distant quasars, assuming the standard Hubble interpretation of their distances. However, if it turns out that these quasars are not so distant, then the largest component of their redshift is intrinsic and not distance-related.

Distance—redshift relationship

Edwin Hubble (and others after him, like Sandage) showed a good correlation between log(z) and the apparent magnitude of normal galaxies, due to inferred cosmological expansion. When applying this to QSOs, there is no observed correlation. Fig. 2 shows the apparent magnitude of 84 bright galaxies as a function of log(z) from Sandage.[31] A linear relationship between redshift and magnitude, and hence distance, is apparent. Conversely, fig. 3 shows the apparent magnitude for more than 7,000 QSOs as a function of log(z) from Hewitt and Burbidge.[32] By plotting log(1+z)—which is related to the wavelength of the photons and thus the energy—the scatter in the points is greatly reduced. The data shows a better correlation with the loss of energy due to the redshift itself and hence it is not a distance effect.[32,33]

Of course, the argument could be made that in the quasar data scatter arises from the variation of luminosity from quasar to quasar. Sandage dealt with this for galaxies by choosing the brightest member of a cluster. As yet, this has not been done for quasars. A comparison of figs. 2 and 3 seems to indicate that the Hubble Law is correct for the biggest and brightest galaxies of clusters as plotted in fig. 2. Therefore, I am not suggesting that there is no truth to the Hubble Law but that we need to be careful in its application. Arp says (in ref. 4) that the apparent magnitude, like those shown in fig. 2, is a better measure of distance. In fact, fig. 2 is a plot of redshift against apparent visual magnitude, not distance. (If you select the biggest and brightest galaxies, generally they are all about the same size and hence have the same absolute brightness.) To determine actual distance from Earth, you need to know the absolute magnitude or brightness of the source.

Varying luminosity

Another remarkable property of quasars is that they exhibit very rapid variations in luminosity (in both optical and radio emissions) on timescales of years, weeks, or less than one hour in the case of quasar PKS 0405-385.[34] This at first was thought to be impossible but was soon confirmed by further observations. This means the size of the emitting region cannot be larger than the light-travel distance across the object over the timescale of the variation. The current standard model is that QSOs are no more than 100 AU across, or the same size as our solar system. PKS 0405-385 should be no more than 8 AU across by the same reasoning.[35] Most QSOs have large redshifts and if interpreted as a measure of distance according to the Hubble relation, that would place them with unreasonably high luminosities ~ 100 times those of normal galaxies. These facts led to what was called the Compton paradox[36] or inverse-Compton catastrophe, a physically impossible state due to the very high radiation densities in these sources.[37–39]

Expanding jets

Radio-astronomers have measured outward motions of structures (jets and other blobs) within QSOs, over timescales of years, that suggested components moving at a few to about 10 times the speed of light. In preserving the conventional redshift interpretation for quasars, the radio-astronomical community have claimed they are detecting superluminal expansion (motions faster than the speed of light). However, this is countered with the argument that it is only apparent superluminal motion and the result of projection effects.[40] Hoyle *et al.*[17] argue that there should be equal numbers of blue and redshifted components. This is countered with the relativistic beaming argument, which describes the jet projected towards us as the one seen, because it is Doppler blueshifted and hence enhanced in luminosity. The counter jet is weakened by Doppler redshifting. There are examples of galaxies of stars, the distances of which are not in question, where such motion doesn't require superluminal expansion, but some high speeds (~ 0.3*c*) have been observed. However, none of these less-than-satisfactory assumptions are required if it is assumed that there is a large, intrinsic redshift component.

Association with galaxies

It has been suggested that some ultraluminous X-ray sources inside galaxies are in fact QSOs being ejected from the active galactic centres.[41] This supports the conclusion by many authors that quasars have been ejected from an associated galaxy.[42–45]

Burbidge and others noted the relationship between the observed redshift of the galaxy (z_G) and the angular separation (θ) of a QSO from its associated galaxy. The results taken from 392 pairs indicate that $\theta z_G \sim$ constant.[46] This shows without doubt that the vast majority of pairs are physically associated; therefore the observed redshifts of the QSOs must have an intrinsic quality.

Arp also showed another effect that strongly suggested a physical association.[4] On many plates it can be seen that there is an alignment of QSOs in a particular direction. In some cases these directions were the same as well-known optical and radio synchrotron jets. Some QSOs are also X-ray sources and observations shows they are being ejected from the parent galaxy but with very different redshifts to the parent galaxy. An association was established between a low-redshift galaxy and 5 blue stellar objects (BSOs), all with $\theta < 12\theta$ of the X-ray Seyfert galaxy.[16] All six objects lay within 20° of a line through the centre of the galaxy. Their redshifts, 0.33, 0.69, 0.93, 1.40 and 2.10, were all very close to the Karlsson abundance peaks. From statistical analysis, the authors obtained a linear regression of $z = 3.06 - 0.22\theta$ with a residual of 0.957. Alternatively, I got a better residual of 0.963 with a curve of the form $z = 4.57 \exp(-0.183\theta)$ (see fig. 4). Extrapolating the latter fit to zero angular separation from the galaxy gives us the value z = 4.57, very close to the last measured peak value 4.45. Arp found the same slope of the fitted curve in another Seyfert NGC 5985 involving 4 quasars (see fig. E-6 of ref. 4), with an offset in part due to a comparative distance factor of 2.

Problems with the black hole/accretion disk model

It was first pointed out in 1963, by Hoyle and Fowler,[47] that the energy source of a quasar or AGN is gravitational and that it could arise from a highly compact object or a massive black hole. This is agreed upon by most of those in the field, but what is not known is how such an object could initially come about. Rees[48] published a figure outlining many possible paths from a variety of initial conditions such as gas clouds, dense star clusters, etc. But how this occurs is still totally unknown, according to Kembhavi and Narlikar, who stated:

> 'It is not known in quantitative terms how the sequences of development would follow. The general expectation is that given the large masses of these systems, they will evolve in such a way that eventually gravity will begin to dominate. … **We will hop across the unworkable details of this scenario and assume** that the end product, a massive black hole, is somehow formed' [emphasis mine].[49]

So it seems that the standard model is believed by faith and that there is no substantial theoretical basis for the formation of the massive black holes in the first place. They assume that it did occur and then get on with the modelling after the fact! The details of the dynamics of the system are usually discussed in great detail; however, they do not know how to extract sufficient energy from such systems to be comparable with observations. Usually, the proposed methods have low efficiencies or fail for one reason or another. Theoretically, one is trying to extract energy from a system—a massive black hole—that inherently tends to suck everything inside the event horizon. (More will be discussed about this further on.) This shows that the standard model is not as well established as one might think, despite the huge effort put into it.

To date there has been little observed evidence of inward flow of material on quasars from spectroscopic evidence or otherwise.[2] Some recent observations[50] suggest a spectral signature of cosmological in-falling gas around the first quasars—those quasars that were first formed only a billion years after the big bang. The abstract of ref. 50 states:

> 'Recent observations have shown that, only a billion years after the big bang, the universe was already lit up by bright quasars fuelled by the infall of gas onto supermassive black holes. The masses of these early black holes are inferred from their luminosities to be $>10^9$ solar masses, which is a difficult theoretical challenge to explain. Like nearby quasars, the early objects could have formed in the central cores of massive host galaxies. The formation of these hosts could be explained if, like local large galaxies, they were assembled gravitationally inside massive ($> 10^{12}$ solar masses) haloes of dark matter. There has hitherto been no observational evidence for the presence of these massive hosts or their surrounding haloes. Here we show that the cosmic gas surrounding each halo must respond to its strong gravitational pull, where absorption by the

infalling hydrogen produces a distinct spectral signature. That signature can be seen in recent data.'

There is a lot more to the story than this abstract lets on. Their interpretation highlights two problems. One is the difficulty of the formation of supermassive black holes so soon after the alleged big bang. And the second is that these galaxies must allegedly have been assembled inside *unobserved* dark matter halos of an incredible size—10 times larger than the Milky Way galaxy. Note the luminosity is based on the assumption that the quasar is at the Hubble distance and the rest follows or falls as the case may be. How much weight can be placed in the interpretation of the modelling of spectroscopic evidence of such assumed very-distant objects when the conclusions of the assumptions are so unusual? Dirac once said, 'That which is not observable does not exist', but these days what is inferred is, 'I know my theory is right; therefore, anything required to make it work must also be right, whether observable or not.' The calculation of the spectral signature that they have attempted to simulate is extremely model-dependent. It starts with the assumption of the Hubble distance to the quasar, which gives the luminosity, then adds assumptions about the form of the accretion disk, density profile, etc. In order to predict the Lyman α absorption around the quasar, they must estimate the mass of its invisible-dark-matter host halo. Finally only a few published spectra are available to test the predictions of the model. Even the fit to one of the two best spectra is very poor.[51]

No accretion disk has ever been unequivocally observed on the scale of galactic nuclei. In May 1994 a rotating disk, which exhibits outward radial velocities, was noted around the galaxy M87, by the Hubble Space Telescope (HST). The rotating disk was determined to have a radius of 20 pc (616×10^{12} km). The central mass of the black hole was calculated to be 3×10^9 solar masses, which puts the Schwarzschild radius at 10^{10} km. The accretion disk should be about 100 times larger, or about 1×10^{12} km or 0.03 pc, which is 600 times smaller than the observed radius.

In 2002 it was claimed the HST had detected an accretionary disk in NGC 4438 in the Virgo Cluster,[52,53] but it does not look anything like a quasar. It has energy levels (and luminosity) more than 7 orders of magnitude lower than a quasar. So if the accretion disk is the correct model for the source of the intense luminosity of a quasar, this one is very peculiar. The nearby low-power radiogalaxy NGC 4261 (3C 270), with a redshift z = 0.007465 is also believed to host a 5×10^8 solar mass black hole with an accretion disk.[54] It contains a pair of symmetric kiloparsec-scale jets emerging from near the black hole, but the properties (low power meaning low luminosity) of this galaxy do not resemble those of a quasar.

There is also an energy problem.[55] The short oscillation/scintillation periods of quasars indicate that they have low masses. The supermassive black hole model requires a very high level of efficiency if it is to deliver the estimated high luminosity of a quasar or AGN. From the observed fluxes, they would need to be more than 100% efficient in converting gravitational energy to radiation, which is impossible. The maximum luminosity that can be sustained by a spherically symmetric accretion with Thomson scattering is the Eddington luminosity, given by[56]

$$L_{Edd} \approx 10^{46}\left(\frac{M}{10^8 M_0}\right) \text{erg s}^{-1}, \qquad (3)$$

where M is the accreting mass and M_0 is a solar mass. Now the Schwarzschild radius (R_S) for a body of mass M is

$$R_S = \frac{2GM}{c^2} \approx 3\times10^{13}\left(\frac{M}{10^8 M_0}\right) \text{cm.} \qquad (4)$$

The characteristic timescale (t_S) for variability or scintillation of the source is the light-travel time across the emitting region. Using (4) t_S is given by

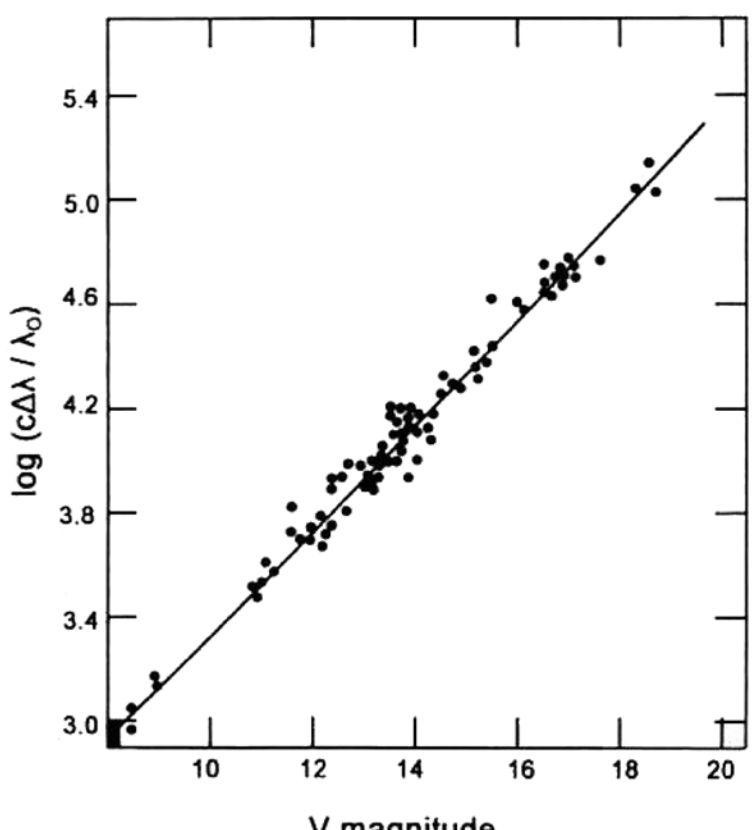

Figure 2. *The apparent magnitude of 84 bright galaxies as a function of log(z), from Sandage.*[31]

$$t_S = \frac{100R_S}{c} \approx 10^5 \left(\frac{M}{10^8 M_0}\right) \text{s}, \quad (5)$$

where I have assumed the emitting region is 100 times R_S. Combining (3) and (5) gives

$$L_{Edd} = 10^{41} \left(\frac{\tau}{1 \text{ sec}}\right) \text{erg s}^{-1}. \quad (6)$$

For a period $\tau \sim 10^3$ s it implies a mass of the order of 10^6 solar masses, but typically quasars are at least 100 times more luminous.

White holes or near-black holes?

It has been asserted[57] that the redshift of QSOs cannot be due to gravitational effects, because for z > 0.5 the objects would be unstable against collapse. In 1964, Hermann Bondi showed for any equation of state in physically realistic fluids (that is, the speed of sound was less than the speed of light in the material), the limiting gravitational redshift from the surface of a compact object was 0.62. However the outward motions observed in these objects suggest another possibility. Instead of the rapidly collapsing matter distribution prior to a black hole formation, what if, as some have suggested,[58,59] black holes can 'bounce'? If so, at the heart of these objects are rapidly expanding white holes—the time-reversed version of a black hole—or expanding near-black holes—a compact object slightly larger than the size it would need to be to be a black hole, but it is exploding with an accompanying outpouring of matter. In that case the object would not be unstable against collapse and may exhibit large gravitational redshifts. Hoyle[60] and Das[61] developed models to overcome the limitations on gravitational redshifts.

However, from (5) and (6) it can be seen that if the emission zone is the region bounded by the Schwarzschild radius of the quasar, then the Eddington limit is no longer an impediment. This is possible because in the case of white holes, where matter is pouring across the event horizon the source of the scintillation may result from processes on that scale. It is not necessary to suppose it must be from a region much farther out ($100R_S$) as is required with the black hole, accretion-disk model. For a source with a scintillation period $\tau \sim 10^3$ it follows that $L_{Edd} \sim 10^{46}$ erg s^{-1}, which is the correct order of magnitude for observations.

Quasar redshift mechanism

So what is the mechanism producing the large redshifts in quasars? Is it gravitational in origin? It would appear that though there are theoretical mechanisms to account for large gravitational redshifts, observations within extended sources indicate that gravitational redshift is not the primary mechanism. The same large redshifts are recorded in the surrounding nebulosity as in the point-like quasar sources.[62] Good examples of this are seen in the spectroscopic analyses of host galaxies at z = 0.135[63] and at z = 0.367[64]. (The latter is 3C 48 the first quasar ever identified in 1961 from radio-emission.) Hence one would expect if the redshift was gravitationally induced, then it would decrease considerably as the material sources are found farther from the point quasar source; i.e. the material is higher up or out of the gravitational potential well. The conclusion must be drawn here that the observed radiation, with the identifying emission and absorption lines, originates in gases which are well outside the compact object—white hole or exploding near-black hole.

Hoyle and Narlikar have developed a mechanism based on a negative energy field to blow apart the mass distribution of a near-black hole and hence stop any infalling additional matter. This is the basis for generating new matter in their new quasi-steady-state model.[18] However, it relies on the concept of negative energy, which is unknown in modern physics. The steady-state model is also a naturalistic model, with no beginning or end, which has many theoretical

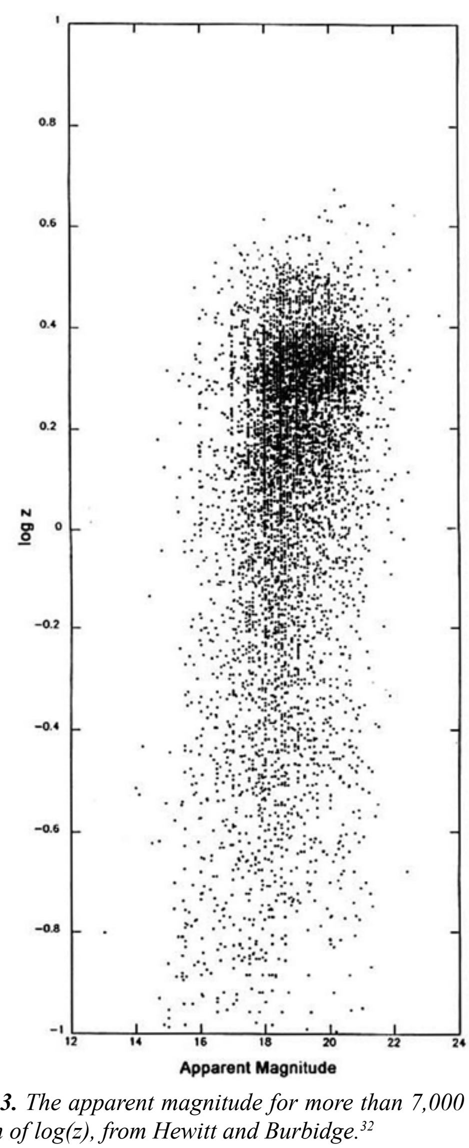

Figure 3. *The apparent magnitude for more than 7,000 QSOs as a function of log(z), from Hewitt and Burbidge.*[32]

objections, but they cannot be dealt with here.[65] The simplest proposal for the energy source at the heart of quasars is a white hole pouring matter out into space.

Alternative causes of redshift are Doppler motion and cosmological. We have discussed that if the association with nearby low-redshift galaxies is true then at least a large part of the observed redshift cannot be cosmological. And no-one would dispute that extremely large Doppler motions are not the cause, though Hubble did initially think in those terms and wrote the redshifts as velocities, which astronomers have continued to do. Cosmologists consider this a very big mistake as they see the galaxies as essentially fixed in space and the expansion of the cosmos giving the appearance of rapid motion away from the observer. They go to great lengths to point out—assuming cosmological expansion—that it does not depend on the time interval over which the cosmos has expanded, only the scale size of the universe when the light was emitted from the source compared to the scale size when the light was received.

One additional cause must not be overlooked—intrinsic. Exactly what this means is unknown. One speculation is the *variable mass hypothesis* promoted by Hoyle, Narlikar, Das and Arp.[66,67] The *variable mass hypothesis* is really Machian in principle. Mach conjectured that the inertia of any particle is the result of the combined gravitational attraction of all the matter in the universe on the particle. Hoyle and Narlikar[68,69] put forward the idea that newly created matter—as it streams out of the centres of active galactic nuclei—accumulates its inertial-mass from the gravitational interaction with all the matter within an ever-expanding light-sphere around it. Their theory shows that newly created matter would accumulate mass proportional to the square of time from the moment of creation. As a result, electrons in atoms—depending on the epoch of their creation—have different masses and hence energies with which they emit photons that, when compared to laboratory standards, show a redshift. Narlikar, Das and Arp made a detailed study of this concept as it applies to quasar ejection pairs and have developed their own cosmology.[70,71]

The quantization mechanism has not yet been solved by these theoreticians. Arp conjectures on some ideas related to the spin of the electron but has no real theory.[72] A problem though—that Arp cites in his book[73]—is that in laboratory experiments, when electron-positron pairs are created from photons, low mass electrons are not produced. He then claims the solution may be in the fact that the energy used is not drawn from elsewhere in the universe. In itself, the argument is very weak. Previously,[5] I had rejected this concept because, being primarily an experimentalist, I believe physics only proceeds based on laboratory experiments. However, this is a limiting philosophy, disregarding God's miraculous actions during creation. Thinking biblically, the following alternative hypothesis is proposed.

Creation of the cosmos

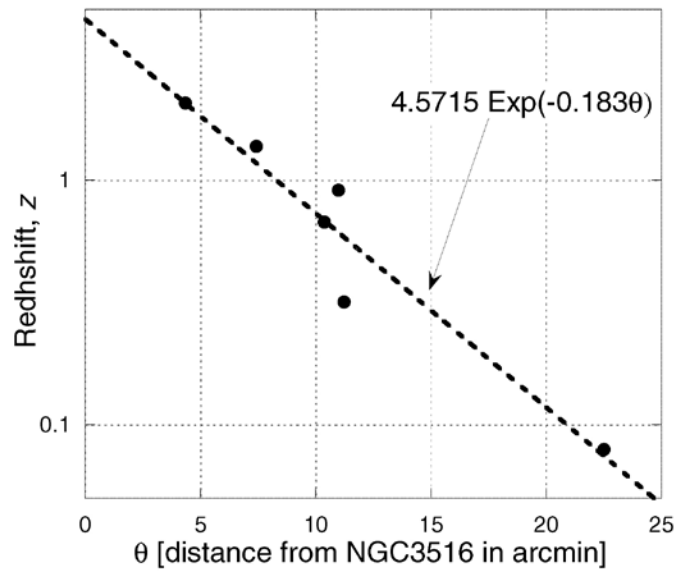

Figure 4. *Redshift as a function of* θ*, the angular distance from the centre of NGC3516. The broken curve is the exponential fit z = 4.57 exp(-0.183*θ *) with a residual of 0.963.*

As explained above, we don't initially measure zero inertial-mass in newly created matter in Earth-based experiments. But what if we are seeing it in the cosmos, not because of location—Arp's conclusion—but because of timing? In the creation-based model that I have been developing,[5] we are seeing the creative acts of God on Day 4 of Creation Week. That is, the ejection of new matter from the AGNs. We are able to see this because of a massive time-dilation event imposed on Earth during Day 4 by God's presence on Earth.[9] So in this model the laws of physics during Creation Week are not presumed to be the same as we have now. Therefore as God creates new matter *ex nihilo,* it accumulates inertial-mass according to the *variable-mass hypothesis*. This overcomes the objection of laboratory pair-creation experiments.

This creation process also results in the ejection of massive quasar-like objects from the nuclei of active and disturbed galaxies. The matter is initially in the form of very-high-redshift quasars that are ejected with near speed-of-light velocities, which slow down as they accumulate inertial-mass. From 30 years of observations,[4] the hypothesis is further advanced, by Arp, Hoyle, Burbidge and others, that quasars evolve into normal galaxies. A strong argument is also made that associates groups of QSOs and similar objects with companion galaxies. And finally, whole clusters of galaxies result from the matter-creation process, and though they have different redshifts they are physically associated.

The work of Halton Arp shows an interesting hierarchical pattern in the redshifts of the galaxies in the large clusters, such as Fornax and Virgo.[5] The centre of the cluster is dominated by a giant, low-redshift, elliptical galaxy. High-redshift quasars are often found paired on opposite sides of parent elliptical galaxies. Farther out, in decreasing redshift, there are BL Lac objects, Seyfert galaxies, Abell clusters of compact x-ray galaxies and normal galaxy clusters. This pattern is repeated all over the sky. Arp views this as a developmental sequence. When redshift is interpreted as a function of age rather than distance, it makes sense of the observational data. When corrections are made for the velocity component of the redshift, intrinsic values are found to be clustered around certain discrete values. This further strengthens the argument for the evolution of the compact, high-redshift objects into normal galaxies.

The concept of quasars containing a white hole is also valid. The redshift evidence simply rules out that the very large discrete redshifts are the result of gravitational effects on *space-time* in the vicinity of the emission sources. This means the source of emission or absorption lines is not coming from deep down in the compact object but from much farther away. The rest of the data, reviewed above, supports the conclusion that material is being ejected from AGNs and quasars—hence a white hole of relatively very small size at the heart of these objects is an obvious conclusion. The size is indicated by the period of scintillation or variation in luminosity, which may ultimately result from the compact source.

The realization about the viability of the *variable-mass hypothesis* is extremely important to creationist cosmology. Creation of matter *ex nihilo,* or from the vacuum with initially zero inertia, can only work in a creationist cosmology. We know from Genesis that the Creator suspended at least some of the laws of physics during Creation Week, in order to create. Therefore, based on our starting assumptions, we would not expect the events of Day 4 to be in accordance with the laws we know today. This then gives us the basis to build a creationist cosmology.[74]

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74. The detail of a new cosmology that gives structure to these claims is obviously necessary. However, time and the scope of this paper do not permit it. I will endeavour to do so in subsequent submissions to *TJ*.

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