

The Alternative Cosmology Group Newsletter - February 2009

The newsletter is distributed gratis to subscribers. Get onto our mailing list without obligation at www.cosmology.info/newsletter. The current newsletter is a review of papers published under astro-ph on arXiv for the month of January, 2009. If you have suggestions of papers you may have come across, please send them to Hilton or Eric.

Contemporary cosmology has developed methodological latitude that surpasses the boundaries of physical science, and allowed what scientists of a bygone era might have called ‘bad habits’. We see the explicit imposition of metaphysics (Black Holes and Dark Matter), the usurping of empirical evidence by mathematical constructs (analysis of the CMBR), and the blatant ignoring of contra-evidence, as listed continuously in our newsletters.

Black Holes

One of the most crucial assumptions used in support of the LCDMM is that of Black Holes. It is vital that Black Holes exist if high-z remoteness is to be accepted. Observational evidence raised in support of BHs is the measurement of high energy radiation, which is conventionally ascribed to the output of a BH environment. However, advancing technology, like this MAGIC study, has enabled the measurement of HE gamma radiation emanating from conventional compact objects, making any conclusion at best ambiguous.

Title: Discovery of very high energy gamma-rays from the flat spectrum radio quasar 3C 279 with the MAGIC telescope

Authors: [M. Errando, R. Bock, D. Kranich, E. Lorenz, P. Majumdar, M. Mariotti, D. Mazin, E. Prandini, F. Tavecchio, M. Teshima, R. Wagner, for the MAGIC Collaboration](#)
[arXiv:0901.3275](#)

Time dilation

Since the notion that SNe light curves provide evidence of time dilation has now been comprehensively debunked (by Andrews, Lerner, and others, and now also **Observations of type 1a supernovae are consistent with a static universe** [David F. Crawford](#), [arXiv:0901.4172](#)), attention now shifts to other objects. GRBs, measured to redshifts $z > 6$, should of course be clear indicators of time dilation in a relativistically expanding Universe. David Crawford shows that they are not: *“Einstein’s theory of relativity is quite definite that if the universe is expanding then the observed duration of these measures will increase with redshift. Thus gamma-ray burst measures should show a time dilation proportional to redshift. An analysis of gamma-ray burst data shows that the hypothesis of time dilation is rejected with a probability of 4.4×10^{-6} for redshifts out to $z = 6.6$...Alternatively it is shown that all the data are consistent with a static cosmology and that if a static cosmology is valid then it can easily explain the results obtained from a concordance cosmology analysis...Thus there is strong support for the notion that there is no time dilation (and) that the universe is not expanding.”*

Title: No Evidence of Time Dilation in Gamma-Ray Burst Data

Author: [David F. Crawford](#)

[arXiv:0901.4169](#)

HUDF

Nikita Nabokov and Yuriy Baryshev have performed an in-depth analysis of 4,000 galaxies in the range $z = 0.5$ — 6.5 from the Hubble Ultra Deep Field, and find, *“...possible superlarge inhomogeneities in the radial distribution of galaxies...with scale lengths as large as 2,000 Mpc.”* In this important study, they obtain diagrams of *angular size/redshift* and *surface brightness/redshift*, classical, key relationships in testing the Hubble law. They conclude, *“An analysis of the distribution of HUDF galaxies reveals strong deviations of the observed number of galaxies from the number of galaxies expected for a uniform distribution.”*

Title: Classical Cosmological Tests for Galaxies of the Hubble Ultra Deep Field

Authors: [Nikita V. Nabokov](#), [Yuriy V. Baryshev](#)

[arXiv:0901.0405](#)

The CFHQS has now discovered 10 QSOs at $z \cong 6.0$, and appears to be continuing to do so. They are valuable objects in any cosmological study, these particularly so since this study finds, *“The new quasars have luminosities 10 to 75 times **lower** than the most luminous SDSS quasars at this redshift.”*

Title: Six more quasars at redshift 6 discovered by the Canada-France High-z Quasar Survey

Authors: [C. J. Willott, P. Delorme, C. Reyle, L. Albert, J. Bergeron, D. Crampton, X. Delfosse, T. Forveille, J. B. Hutchings, R. J. McLure, A. Omont, D. Schade](#)

[arXiv:0901.0565](#)

The technique of Maser parallax is providing a sorely-needed second check on distance measures. However, the results are not comforting: “*We have used the VLBA to measure the annual parallax of the H₂O masers in the star-forming region IRAS 00420+5530. This measurement yields a direct distance estimate of 2.17 ± 0.05 kpc (<3%), which **disagrees substantially** with the standard kinematic distance estimate of ~ 4.6 kpc...The 3-dimensional space velocity of IRAS 00420+5530 at this new, more accurate distance implies a substantial non-circular and anomalously slow Galactic orbit...as well as line-of-sight velocity residuals in the rotation curve analysis of Brand & Blitz (1993). ...[]...The direct geometric distance estimate reported here is **more than a factor of two closer** than the kinematic distance of ~ 4.7 kpc implied by a radial velocity of -46 km s^{-1} using the rotation curve of Brand & Blitz (1993).*”

Title: A Precise Distance to IRAS 00420+5530 via H₂O Maser Parallax with the VLBA

Authors: [G. A. Moellenbrock, M. J. Claussen, W. M. Goss](#) (NRAO)

[arXiv:0901.0517](#)

Astrometric measurements using the VBLA find remarkably similar inconsistencies: “*We find that young pulsars are moving away from the Galactic plane, as expected, and that age estimates from kinematics and pulsar spindown are generally in agreement, with certain notable exceptions...For several high-latitude pulsars, the NE2001 electron density model **underestimates the parallax distances by a factor of two**, while in others the estimates agree with or are larger than the parallax distances, suggesting that the interstellar medium is irregular on relevant length scales.*”

Title: Precision Astrometry with the Very Long Baseline Array: Parallaxes and Proper Motions for 14 Pulsars

Authors: [S. Chatterjee, W. F. Brisken, W. H. T. Vlemmings, W. M. Goss, T. J. W. Lazio, J. M. Cordes, S. E. Thorsett, E. B. Fomalont, A. G. Lyne, M. Kramer](#)

[arXiv:0901.1436](#)

Quasars

Martin Lopez-Corredoira gave an invited talk, to be published in the proceedings of the conference “*Evolution of Cosmic Objects through their Physical Activity (V. Ambartsumian 100th anniversary)*”, held at Byurakan Observatory (Armenia), on September 15th-18th, 2008. He examines evidence for physical connections in the light of Ambartsumian’s proposal that “*galaxies beget galaxies*”.

Title: Apparent discordant redshift QSO-galaxy associations

Author: [Martin Lopez-Corredoira](#)

[arXiv:0901.4534](#)

Stellar metallicity is a key parameter in cosmological ageing. High- z studies are consistently showing that galaxies do not evolve inversely with redshift, as expected by the LCDM model. The following papers are no exception: “*The inferred metallicity of the BLR gas is so high (several times solar) that metal ejection or mixing with lower metallicity gas in the host galaxy is required to match the metallicities observed in local massive galaxies. On average, the observed metallicity changes neither among quasars in the observed redshift range $4 < z < 6.4$, nor when compared with quasars at lower redshifts...The data also suggest a lack of evolution in the carbon abundance, even among $z > 6$ quasars. The latter result is puzzling, since the minimum enrichment timescale of carbon is about 1 Gyr, i.e. longer than the age of the universe at $z \sim 6$.*”

Title: The metallicity of the most distant quasars

Authors: [Y. Juarez, R. Maiolino, R. Mujica, M. Pedani, S. Marinoni, T. Nagao, A. Marconi, E. Oliva](#)

[arXiv:0901.0974](#)

Again: “*We compare the metallicities in high-redshift quasars to the star formation rates (SFR) in their host galaxies using measurements of broad emission lines and far-infrared (FIR) luminosities...We detect high metallicities throughout the sample, up to several times solar, confirming that star formation must have begun before the visible quasar phase. However, we do not detect a trend in metallicity versus current SFR.*”

Title: Quasar Metal Abundance and FIR Luminosity

Authors: [L. E. Simon, F. Hamann](#)

[arXiv:0901.4300](#)

This study establishes link between QSOs and gRSs, suggesting that quasars may over time develop into giant galaxies.

Title: Giant Radio Galaxies - old long-living quasars?

Authors: [B. V. Komberg, I.N. Pashchenko](#)

[arXiv:0901.3721](#)

Imposing redshift-distance upon quasars brings great difficulties for physics. Such a position cannot be held unless metaphysical phenomena like Black Holes and Dark Matter are invoked. Conventional, empirically derived physics is simply inadequate in such cases.

Title: A simple model to link the properties of quasars to the properties of dark matter halos out to high redshift

Author: [Darren J. Croton](#)

[arXiv:0901.4104](#)

Galaxy evolution

The discrepancy between popular models and actual observation is cause for concern. This study, while attempting to accommodate these discrepancies within the LCDM interpretation of a bottom-up hierarchy, nevertheless highlights the observational evidence for top-down galaxy formation along the lines proposed by Halton Arp. In particular, the authors found specifically that, “*The data do clearly show the trend that is generally referred to as archaeological Down Sizing, i.e., massive galaxies are older than low-mass galaxies.*”

Title: The Many Manifestations of Downsizing: Hierarchical Galaxy Formation Models confront Observations

Authors: [Fabio Fontanot, Gabriella De Lucia, Pierluigi Monaco, Rachel S. Somerville, Paola Santini](#)

[arXiv:0901.1130](#)

The concordance model expects a clear evolutionary correlation between age and z^{-1} (a calibration of lookback time). Ferreras et al examined 457 massive galaxies, and produce some astonishing results, among them that, “...we find that the number density of massive early-type galaxies is consistent with **no evolution** between $z=1.2$ and 0, i.e. over an epoch spanning more than half of the current age of the Universe.”

Title: On the formation of massive galaxies: A simultaneous study of number density, size and intrinsic colour evolution in GOODS

Authors: [Ignacio Ferreras, Thorsten Lisker, Anna Pasquali, Sadegh Khochfar, Sugata Kaviraj](#)

[arXiv:0901.4555](#)

MOND

In an invited talk at “*International Conference on Particles and Nuclei (PANIC08), Eilat, Israel, November 9-14, 2008*”, Dr Jacob Benkenstein outlined the case for relativistic MOND: “*Milgrom's Modified Newtonian Dynamics (MOND) provides an efficient way to summarize phenomenology of galaxies which does not lean on the notion of dark matter; it has great predictive power. Here I briefly review MOND as well as its implementation as a nonrelativistic modified gravity theory, AQUAL. Gravitational lensing and cosmology call for a relativistic gravity theory different from general relativity if dark matter is to be avoided. In recent years such a theory, TeVeS, has emerged from the marriage of AQUAL with the timelike vector field of Sanders.*”

Title: Relativistic MOND as an alternative to the dark matter paradigm

Authors: [Jacob D. Bekenstein](#)

[arXiv:0901.1524](#)

Geometry

The Big Bang expanding Universe is spatially finite, as required by the underlying GRT. Eminent Oxford cosmologist Joseph Silk collaborated with Mihran Vardanyan and Roberto Trotta to compare geometric models, and controversially declare, “*we show that, given current data, the probability that the Universe is spatially **infinite** lies between 67% and 98%, depending on the choice of priors...[]...we have shown that a model selection perspective places much more taxing requirements on the accuracy of future datasets than one would naively assume. In particular, a 5σ detection threshold is recommended in order to avoid both model confusion and model ambiguity in the determination of the geometry. However, if the value of the curvature parameter is smaller than $\sim 10^{-4}$ we found that no amount of observations will be able to decide on the true geometry of the Universe. Achieving this lower limit will require an improvement of another factor of 20 over what a CVL CMB experiment with an SKA-like BAO probe will obtain. This might be feasible once other, orthogonal datasets such as weak lensing and SNIa observations are added to the likelihood, although it will be a formidable challenge to control systematics at this level of statistical accuracy.*” Bluntly put, the world’s favourite cosmological model is extremely unlikely.

Title: How flat can you get? A model comparison perspective on the curvature of the Universe

Authors: [Mihran Vardanyan, Roberto Trotta, Joe Silk](#)

[arXiv:0901.3354](#)

CMBR

It appears that the original interpretation of the MB discovered by Penzias and Wilson (that it fulfilled the Big Bang prediction of Gaussian homogeneity) was incorrect, probably because of the low resolution of the original images. Since then, COBE and WMAP have provided sharper data, and compelled the authors of the Standard Model to reformulate their prediction to fit observations of non-Gaussianity. Ironically, all of the CMBR studies currently being published investigate anisotropies and inhomogeneities that by definition, shouldn't be there.

Title: Modelling non-Gaussianity from foreground contaminants

Author: [C.S. Carvalho](#)

[arXiv:0901.3613](#)

The term “anomalous” is now standard terminology in the glossary of WMAP analysis. (Note: Lead author J M Diego was last year part of a team that investigated the “Great Cold Spot” and concluded that it too was anomalous).

Title: WMAP anomalous signal in the ecliptic plane

Authors: [J.M Diego, M. Cruz, J. Gonzalez-Nuevo, M. Maris, Y. Ascasibar, C. Burigana](#)

[arXiv:0901.4344](#)

Electricity

The synergy between electricity and magnetism manifests in stellar dynamos, and we are able to study this phenomenon close-up in the Sun. It is intriguing however, to contemplate why serious studies like this one ignore the comprehensive experimental results obtained by plasma physicists.

Title: Paradigm shifts in solar dynamo modelling

Author: [Axel Brandenburg](#)

[arXiv:0901.3789](#)

The identification of Alfvén waves as a driving mechanism in stellar winds is an important concession to plasma physics in cosmology.

Title: Alfvén waves as a driving mechanism in stellar winds

Authors: [A. A. Vidotto, V. Jatenco-Pereira](#)

[arXiv:0901.4573](#)