



ALTERNATIVE COSMOLOGY GROUP

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[The Alternative Cosmology Group Newsletter - November 2009](#)

The ACG 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 1142 papers published on arXiv under astro-ph, together with 520 under gen-phys, for the month of October, 2009. We now include papers archived elsewhere, provided access is full and open. The Alternative Cosmology Group draws its mandate from the open letter published in *New Scientist*, 2004 (www.cosmologystatement.org), and this newsletter seeks to publicise recently published empirical results that are aligned with that ethos. If you would like to suggest recently published or archived papers for inclusion, please send the arXiv, viXra or other direct reference and a brief exposition to Hilton Ratcliffe (hilton@hiltonratcliffe.com). Note that our spam filter rejects slash and colon in the text, so please write web addresses commencing “www”.

Thanks are due to Dr Richard Lewis for pointing out an error in my lead-in to the paper by Joel Primack ***Cosmology: small scale issues revisited*** in the last newsletter. Dr Lewis wrote, “*I am surprised that you allowed such an elementary error by Joel Primack as this in your recent newsletter: ‘The Dark Matter has to be cold or it would radiate thermally, and thus violate the “darkness”. Unfortunately, whilst coldness does keep the matter dark, it brings with it a slew of other problems.’ Only a particle that couples with the electromagnetic interaction will radiate thermally. For example, a neutrino moving at 99% light speed—and thus ‘hot’—will not radiate any thermal radiation. As the key characteristic of dark matter is that it does not couple electromagnetically, the whole discussion that follows has no foundation to stand on.*”

I wish to point out that the error was mine, not Dr Primack’s, and apologise for it.

The [Natural Philosophy Alliance](#) has been hosting weekly web conferences for some time now, which are great opportunities to share one’s research results with others and interact with them on the subject. The recent presentation on Relational Mechanics by Professor Andre Assis was outstanding, and drew considerable response from the audience. Greg Volk wrote to invite participation from ACG members: “*Your group is welcome to use our online service to host meetings any time it wants. Other interest groups have been meeting on Friday evenings (US time), though you could meet a different time. Let me know if you want to set something up.*”

Thank you, Greg. I suggest that anyone interested interact directly with the NPA via the hyperlink above.

Some of us noted with a measure of despondency that string theorist Dr Brian Greene has filled the Lucasian Chair of Mathematics vacated at Cambridge University by retiring Professor Stephen Hawking. Has theoretical physics just fallen from the frying pan into the fire? To be fair though, it is after all a chair in mathematics, and it's therefore perfectly appropriate that the incumbent should at the extremes of a mathematical curriculum concern himself with the likes of strings, branes, Black Holes, multiverses, Calabi-Yau manifolds, and wormholes while we continue to consider the evidence presented by the Universe in which we live. Unfortunately, the two fields of endeavour are in conflict, as evidenced by the papers listed in this newsletter.

Cosmology

Legendary cosmologist Professor Jim Peebles delivered a keynote address to the conference *21st Rencontre de Blois* in which he makes the following controversial declaration (the bold emphasis is mine): *“Briefly, standard Λ CDM assumes conventional local physics, general relativity theory, expansion from a hot big bang with initially small adiabatic gaussian near scale-invariant departures from homogeneity and isotropy, cold dark matter, Einstein's cosmological constant Λ , and negligible space curvature. **Some of these elements were chosen because they were seen to offer a promising fit to improving measurements.** They must be counted as ‘free parameters,’ along with the six or seven adjustable parameters (depending on how you count) in Λ CDM. It is important therefore that this cosmology passes a considerably greater variety of tests that could have falsified it. Λ CDM is predictive.”*

[38] [arXiv:0910.0160](https://arxiv.org/abs/0910.0160)

Title: Lessons from Windows on the Universe

Authors: [P. J. E. Peebles](#)

Another paper archived this month by Dr Peebles concerns the science required of invisible phenomena making up 94% of the Concordance universe, which he and others strangely label “empirical.” In the abstract, Dr Peebles states, *“Cosmology is operating now on a well established and tightly constraining empirical basis. The relativistic LambdaCDM hot big bang theory is consistent with all the present tests; it has become the benchmark. But the many open issues in this subject make it reasonable to expect that a more accurate cosmology will have more interesting physics in the invisible sector of the universe, and maybe also in the visible part.”*

[924] [arXiv:0910.5142](https://arxiv.org/abs/0910.5142)

Title: Phenomenology of the Invisible Universe

Authors: [P. J. E. Peebles](#)

Frederico Piazza is clearly less optimistic than Jim Peebles: *“...there appear to be few difficulties afflicting the effective framework for gravity already at low energy that are likely to be detached from the high-energy structure. Those include the*

black hole information paradox, the cosmological constant problem and the rather involved and fine tuned model building required to explain our cosmological observations.”

[1117] [arXiv:0910.4677](https://arxiv.org/abs/0910.4677)

Title: Some new views on the low-energy side of gravity

Authors: [Federico Piazza](#)

Dr Mike Disney has a kindred spirit in the author of the following paper, extending his healthy scepticism of cosmology as true science: *“In recent years, by theory and observation cosmology has advanced substantially. Parameters of the concordance or LambdaCDM cosmological model are given with unprecedented precision (‘precision cosmology’). On the other side, 95% of the matter content of the universe are of an unknown nature. This awkward situation motivates the present attempt to find cosmology's place among the (exact) natural sciences. Due to its epistemic and methodical particularities, e.g., as a mathematized historical science, cosmology occupies a very special place. After going through some of the highlights of cosmological modeling, the conclusion is reached that knowledge provided by cosmological modeling cannot be as explicative and secure as knowledge gained by laboratory physics.”*

[493]gen-ph [arXiv:0910.4333](https://arxiv.org/abs/0910.4333)

Title: What kind of science is cosmology?

Authors: [Hubert F. Goenner](#)

Black Holes

The assumption of Black Holes as real, interacting astrophysical objects is an essential component of the LCDM methodology, and BH masses are invoked to explain anomalies like the incredible intensity of QSOs if they indeed lie at redshift-indicated distances. However, the way that BH mass is calculated is open to model-fitting and other abuses. This paper gives three currently employed methods, the latest best-practice in obtaining Black Hole mass.

[78] [arXiv:0910.0313](https://arxiv.org/abs/0910.0313)

Title: Mass of black holes: The State of the Art

Authors: [B. Czerny](#), [M. Nikolajuk](#)

Australian theoretical physicist Stephen Crothers has published another paper debunking BHs, this one, in his own words, *“...makes a mockery of the Kruskal-Szekeres ‘coordinates’ that conjure up the black hole.”*

http://www.ptep-online.com/index_files/2010/PP-20-01.PDF

Title: The Kruskal-Szekeres “Extension”: Counter-Examples

Author: Stephen J. Crothers

Dark Matter/Dark Energy/MOND

The normally orthodox journal *Nature* leant a bit away from the current to publish the following letter arguing in favour of MOND. It was overlooked in last month's newsletter, and it's important that we note that slightly controversial results are making it past the censors.

[arXiv:0909.5203](https://arxiv.org/abs/0909.5203)

Title: Universality of galactic surface densities within one dark halo scale-length

Authors: Gianfranco Gentile, Benoit Famaey, HongSheng Zhao & Paolo Salucci

(*Nature*, Vol 461| 1 October 2009| doi:10.1038/nature08437)

"MOND is a phenomenological modification of Newton's law of gravitation which reproduces the dynamics of galaxies, without the need for additional dark matter. This paper reviews the basics of MOND and its application to dwarf galaxies. MOND is generally successful at reproducing stellar velocity dispersions in the Milky Way's classical dwarf ellipticals, for reasonable values of the stellar mass-to-light ratio of the galaxies; two discrepantly high mass-to-light ratios may be explained by tidal effects. Recent observations also show MOND describes tidal dwarf galaxies, which form in complex dynamical environments... The standard dark matter cosmology boasts numerous manifest triumphs; however, alternatives should also be pursued as long as outstanding observational issues remain unresolved, including the empirical successes of MOND on galaxy scales and the phenomenology of dark energy."

[855] [arXiv:0910.4802](https://arxiv.org/abs/0910.4802)

Title: Dwarf Galaxies, MOND, and Relativistic Gravitation

Authors: [Arthur Kosowsky](#)

"In our current cosmological model, the main constituents of the Universe are dark matter and dark energy, whose nature is unknown, and for which there is no place in the standard model of particle physics. How to include dark matter and dark energy in the set of fundamental laws? All observations can as well be explained either within the frame of general relativity, by adding unknown components in the Universe, or by modifying fundamentally the theory. Would not the last possibility be more simple? This is the case of the MOND hypothesis (for MODified Newtonian Dynamics) proposed by Milgrom in 1983, which is quite successful to describe the kinematics and dynamics of galaxies. It might however also be possible to reach the same success through a new kind of matter, dipolar dark matter, keeping general relativity for the law of gravity."

[933] [arXiv:0910.5204](https://arxiv.org/abs/0910.5204)

Title: MOND with or without dark matter

Authors: [Luc Blanchet](#), [Francoise Combes](#)

Quasars

Dr Martin Lopez-Corredoira has always positioned himself very objectively in analysis of observational results, considering both aligned and non-aligned interpretations fairly. This paper is no exception. It is a summary of apparently anomalous features of quasars at both low and high redshift.

[771] [arXiv:0910.4297](https://arxiv.org/abs/0910.4297)

Title: Pending problems in QSOs

Authors: [Martin Lopez-Corredoira](#)

Plasmas

Plasma physics is a vital component of our understanding of the cosmos, given that plasmas occur ubiquitously in space. The following paper is of great significance to plasma cosmologists, and gives exact equations for a variety of phenomena in laboratory plasmas. The recent discovery of Bethe's CNO nuclear fusion cycle at the foot points of solar coronal arches (2005, astro-ph/0512633) emphasises the importance in astrophysics of the connection between thermonuclear energy and electromagnetism. *"The importance of the thermomagnetic Nernst effect for the problem to stabilize plasma by a vorticity containing shear flow, becomes important in the vicinity of cold walls where the temperature gradient is large, but can conceivably also become important in the presence of thermonuclear reactions, where the reaction rate goes with a high power of the temperature."*

[102]gen-phys [arXiv:0910.1626](https://arxiv.org/abs/0910.1626)

Title: Shear Flow Stabilization of a z-Pinch Plasma in the Presence of a Radial Temperature Gradient

Authors: [F.Winterberg](#)

Steady State

We haven't heard from Michael Ibison for some time. He makes a welcome return with this exposition of the thermalisation of starlight in the Steady State. *"We investigate the fate of starlight in the Steady-State Cosmology. We discover that it is largely unaffected by the presence of ions in intergalactic space as it gets progressively red-shifted from the visible all the way down to the plasma frequency of the intergalactic matter. At that point, after about 450 Gyr - and contrary to previously published claims - the radiation will be thermalized. Under the assumptions adopted by Gold, Bondi, Hoyle, Narlikar, Burbidge and others concerning the creation of matter in the Steady-State Cosmology, and using reasonable estimates for the baryonic mass-density and mass-fraction of ^4He , the analysis predicts a universal radiation field matching the CMB, i.e. having a black-body spectrum and temperature of about 2.7 K. The Steady-state Cosmology predicts that this radiation field will appear to originate from the intergalactic plasma."*

[189]gen-phys [arXiv:0910.3004](https://arxiv.org/abs/0910.3004)

Title: Thermalization of Starlight in the Steady-State Cosmology

Authors: [M. Ibison](#)

CMBR & WMAP

If the energy density of self-gravitating particles in the Universe is the same as the energy density of the CMBR, what does that tell us? It can hardly be coincidence. *“The ratio of the self-gravitational energy density of the scattering particles in the universe to the energy density of the scattered photons in the cosmic microwave background (CMB) is the same in any volume of space. These two energy densities are equal at a radiation temperature on the order of the present CMB temperature.”*

[46] [arXiv:0910.0198](#)

Title: The Cosmic Microwave Background: a strange characteristic

Authors: [A. Dinculescu](#)

The LCDM model predicted a Gaussian distribution in the CMBR power spectrum. WMAP observation shows that that it is in fact non-Gaussian. Attempts are being made to revise the prediction, but Dr Golovnev takes issue with that, specifically the earlier paper by Vanchurin which argued that non-Gaussian distribution tails could not be from the galactic foreground, and must therefore be cosmological. *“I explain why, in my current opinion, the signal detected in [arXiv:0906.4954](#) can hardly have something to do with cosmological perturbations, but rather it presents a fancy measurement of the Milky Way angular width in the microwave frequency range.”*

[952] [arXiv:0910.5280](#)

Title: Non-Gaussian Probability Distribution for the CMB Angular Power Spectra?

Authors: [Alexey Golovnev](#)

Method

Sometimes the significance of a particular set of findings is obscure. Mass-to-light ratios are used with confidence to establish other properties of astrophysical objects and build models, yet Kruijssen and Mieske find a 20% variance between model and observation in M/L ratio in Globular Clusters. Even more significantly, they find that GCs dissolve by ejecting low-mass stars. *“The observed mass-to-light (M/L) ratios of globular clusters (GCs) are on average ~20% lower than expected from Simple Stellar Population (SSP) models, which only account for the effects of stellar evolution. We study the M/L ratio evolution of a sample of 24 Galactic GCs using parameterised cluster models. The dynamical evolution of GCs is included by accounting for their dissolution and by using a detailed description of the evolution of the stellar mass function. The ejection of low-mass stars leads to a decrease of M/L, which is found to explain the discrepancy between the observations and SSP models.”*

[851] [arXiv:0910.4773](#)

Title: The Mass-to-Light Ratios of Galactic Globular Clusters

Authors: [J. M. Diederik Kruijssen](#), [Steffen Mieske](#)

Leaving aside the controversial assumption in this paper of a BH in the target object, the increasing reach of direct distance measurement, especially parallax, is providing useful insights into the unreliability of model-based methods. *“Using astrometric VLBI observations, we have determined the parallax of the black hole X-ray binary V404 Cyg to be 0.418 ± 0.024 milliarcseconds, corresponding to a distance of 2.39 ± 0.14 kpc, significantly lower than the previously accepted value. This model-independent estimate is the most accurate distance to a Galactic stellar-mass black hole measured to date.”*

[945] [arXiv:0910.5253](#)

Title: The first accurate parallax distance to a black hole

Authors: [J. C. A. Miller-Jones](#) et al

Titles of the Month

“We argue that a restriction determined by a drawn card or quantum random numbers, on the running of LHC (Large Hadron Collider), which was proposed in earlier articles by us, can only result in an, at first, apparent success whatever the outcome. This previous work was concerned with looking for backward causation and/or influence from the future, which, in our previous model, was assumed to have the effect of arranging bad luck for large Higgs producing machines, such as LHC and the never finished SSC (Superconducting Super Collider) stopped by Congress because of such bad luck, so as not to allow them to work.”

[27] gen-phys [arXiv:0910.0359](#)

Title: Card game restriction in LHC can only be successful!

Authors: [Holger B. Nielsen](#), [Masao Ninomiya](#)

*“To illustrate this thesis we give evidence that the well-known Turing incomputability barrier can be trespassed via quantum indeterminacy. From this algorithmic viewpoint, the ‘fine tuning’ of physical phenomena amounts to a **‘(re)programming’ of the universe.**”*

[34]gen-phys [arXiv:0910.0457](#) [[pdf](#), [other](#)]

Title: Is Feasibility in Physics Limited by Fantasy Alone?

Authors: [Cristian S. Calude](#), [Karl Svozil](#)