

The Alternative Cosmology Group Newsletter - January 2009

The newsletter is distributed gratis to subscribers. Get onto our mailing list without obligation at www.cosmology.info/newsletter. The current newsletter covers all papers published on arXiv:astro-ph during December 2008.

Obituary

On January 9, 2009, ACG stalwart and eminent astronomer Dr Tom Van Flandern passed away shortly after being diagnosed with cancer. He was 68 years old. Tom received his PhD in Celestial Mechanics (theory of orbits) from Yale University in 1969. From 1963 to 1983 he was employed at the US Naval Observatory, where he rose to Chief of Celestial Mechanics for the Nautical Almanac. He was particularly involved in improving the accuracy of the Global Positioning System. In 1991, he founded the Meta Research Institute to support ideas in astronomy and astrophysics that were not popular with mainstream institutions and publications, and followed this with his book *Dark Matter, Missing Planets, and New Comets* in 1998. In recent years he was a Research Associate at the University of Maryland, and consultant on GPS to the US Army Research Laboratory in Adelphi, MD. He was active in both the Alternative Cosmology Group (he served on the committees for both conferences) and the Natural Philosophy Alliance, where he was highly respected for his critiques of both Special and General Theories of Relativity, subjects which he was particularly well qualified to discuss. He leaves his wife Barbara, four children, and a number of grandchildren. He will be sorely missed on this team. R.I.P.

Exclusion by error in earlier 2008 newsletters

We inadvertently overlooked the conference *Problems of Practical Cosmology* (June 2008, St. Petersburg, Russia), for which all 85 reports are available in ADS, and which was constructed so that to compare the basis and main results of the standard cosmological model with other cosmological models. A summary is available at

Title: Practical cosmology and cosmological physics

Authors: [Yu. Baryshev](#), [I. Taganov](#), [P. Teerikorpi](#)

[arXiv:0809.1084](http://arxiv.org/abs/0809.1084)

and all reports of the Proceedings also are available at

http://ppc08.astro.spbu.ru/text_proc.html

Methodology

The general adoption of astrophysical techniques with second- or third-generation model-dependent assumptions will have the natural consequence of creating synthetic support for the underlying model. The data themselves are most often unambiguous; interpretation, on the other hand, becomes a matter of choice.

Sociology

The abstract of Martin Lopez-Corredoira's invited talk at the conference "*Cosmology across Cultures*" in Granada, Spain, sums up the problem: "*Certain results of observational cosmology cast critical doubt on the foundations of standard cosmology but leave most cosmologists untroubled. Alternative cosmological models that differ from the Big Bang have been published and defended by heterodox scientists; however, most cosmologists do not heed these. This may be because standard theory is correct and all other ideas and criticisms are incorrect, but it is also to a great extent due to sociological phenomena such as the 'snowball effect' or 'groupthink'. We might wonder whether cosmology, the study of the Universe as a whole, is a science like other branches of physics or just a dominant ideology.*"

Title: Sociology of Modern Cosmology

Authors: [Martin Lopez-Corredoira](#)
[arXiv:0812.0537](#)

Large Scale Structure

Francesco Sylos Labini, Nicolay Vasilyev, and Yuriy Baryshev show in this paper much more structure than theory predicts: "*We point out that standard models of structure formation are unable to explain the existence of the large fluctuations in the galaxy density field detected in these samples.*"

We unfortunately overlooked their related earlier paper *The large scale inhomogeneity of the galaxy distribution* [arXiv:0805.1132](#), where they state, "*We find that the newest samples of the Sloan Digital Sky Survey provide unambiguous evidence that galaxy structures correspond to large amplitude density fluctuations at all scales limited only by sample sizes.*"

Title: Persistent fluctuations in the distribution of galaxies from the Two degree Field Galaxy Redshift Survey

Authors: [Francesco Sylos Labini, Nikolay L. Vasilyev, Yuriy V. Baryshev](#)
[arXiv:0812.3260](#)

This study presents a theoretical model of the formation of ultra-large-scale structure, and predicts even greater things. It takes no account of the physical constraints that limit structure formation within the supposed time scale of the Standard Model.

Title: The origin of 'Great Walls'

Authors: [Sergei Shandarin](#)

[arXiv:0812.4771](#)

Axis of Evil

Michael Longo has extended his study of SDSS galaxies (increasing the dataset from 2616 to 15872 spiral galaxies) and found an overall handedness in the sample consistent with his earlier study, and correlated with the “axis of evil” preferred direction identified by Land and Magueijo. “*The axis of the dipole asymmetry lies at approx. $(l, b) = (32^\circ, 69^\circ)$, roughly along that of our Galaxy and close to the so-called ‘Axis of Evil’*”. Of course, this result also weighs against the Cosmological Principle.

Title: Does the Universe Have a Handedness?

Authors: [Michael J. Longo](#)

[arXiv:0812.3437](#)

The power asymmetry in the CMBR previously thought to be limited to very large scales, has now been measured right across the multipole range, from $l = 2$ to $l = 600$. In fact, there is now a distinct hemispherical asymmetry in the power spectrum, once again leading to a conclusion of handedness and non-trivial anisotropy.

Title: Power Asymmetry in Cosmic Microwave Background Fluctuations from Full Sky to Sub-degree Scales: Is the Universe Isotropic?

Authors: [F. K. Hansen, A. J. Banday, K. M. Gorski, H. K. Eriksen, P. B. Lilje](#)

[arXiv:0812.3795](#)

Anomalous redshifts

A study of galaxy merger events has revealed an unexpected correlation with Arp’s ejection hypothesis, although the implication appears to have escaped the authors. They declare, “*For the first time, our NICMOS data provides imaging with sufficient angular resolution and depth to collate a sufficiently large sample of massive galaxies at $z > 1.5$ to reliably measure their pair fraction history. We find strong evidence that the pair fraction of massive galaxies evolves with redshift.*” The emphasis is ours. The question that remains unanswered is whether “merger events” are indeed merging. They may be diverging. Arp found that high redshift objects are frequently paired

around massive AGN, appear to have been ejected, and show signs of redshift diminishing with distance from the parent galaxy. Thus, the pairing would be more obvious with high redshift objects.

Title: A Surprisingly High Pair Fraction for Extremely Massive Galaxies at $z \sim 3$ in the GOODS NICMOS Survey

Authors: [Asa F. L. Bluck, Christopher J. Conselice, Rychard J. Bouwens, Emanuele Daddi, Mark Dickinson, Casey Papovich, Haojing Yan](#)
[arXiv:0812.0926](#)

Meanwhile, David G Russell has fine-tuned his TFR analysis of galaxy redshifts to include K-band. The results confirm and constrain his earlier analyses of anomalous redshifts in the Virgo cluster. *“A comparison with the results of the Hubble Key Project (Freedman et al 2001) is made. Discrepancies between the K-TFR distances and the HKP I-TFR distances are discussed. Implications for Λ -CDM cosmology are considered with $H_0=84 \text{ km s}^{-1} \text{ Mpc}^{-1}$. It is concluded that it is very difficult to reconcile the value of H_0 found in this study with ages of the oldest globular clusters and matter density of the universe derived from galaxy clusters in the context of Λ -CDM cosmology.”*

Title: The Ks-band Tully-Fisher Relation - A Determination of the Hubble Parameter from 218 ScI Galaxies and 16 Galaxy Clusters

Author: [David G. Russell](#)
[arXiv:0812.1288](#)

Paola Marziani, Jack Sulentic and colleagues have produced a spectroscopic analysis of 30 QSOs as part of an ongoing programme to accumulate signature data on this class of objects. Their findings here indicate, inter alia, that the diversity of broad line spectra makes the estimation of Black Hole mass unacceptably unreliable. Also discussed is the population A/B dichotomy.

Title: LT/ISAAC Spectra of the Hbeta Region in Intermediate-Redshift Quasars III. Hbeta Broad Line Profile Analysis and Inferences about BLR Structure

Authors: [P. Marziani, J. W. Sulentic, G. M. Stirpe, S. Zamfir, M. Calvani](#)
[arXiv:0812.0251](#)

Stephan's Quintet is arguably the most extensively studied compact group, and is controversial because one of the original five members (NGC 7320) has been declared a foreground object because of its discordant redshift.

Furthermore, NGC 7318b is labelled an interloper as it too has a discordant redshift. This study attempts to justify the standard view.

Title: A Chandra X-ray view of Stephan's Quintet: Shocks and Star-formation

Authors: [E. O'Sullivan](#), [S. Giacintucci](#), [J.M. Vrtilik](#), [S. Raychaudhury](#), [L.P. David](#)

[arXiv:0812.0383](#)

The SDSS and Gaia surveys

The Sloan Digital Sky Survey is the most comprehensive galaxy catalogue ever produced. It has provided an immense database for study, and the latest SDSS7 release will be welcomed by investigators in the field.

Title: The Seventh Data Release of the Sloan Digital Sky Survey

Authors: [K. Abazajian](#), et al

[arXiv:0812.0649](#)

However, the SDSS will be eclipsed by the ESA's Gaia mission, due for launch in 2011. It will provide *"astrometric, photometric and spectroscopic data of very high quality for about one billion stars brighter than $V=20$. This will allow to reach an unprecedented level of information and knowledge on several of the most fundamental astrophysical issues, such as mapping of the Milky Way, stellar physics (classification and parameterization), Galactic kinematics and dynamics, study of the resolved stellar populations in the Local Group, distance scale and age of the Universe, dark matter distribution (potential tracers), reference frame (quasars, astrometry), planet detection, fundamental physics, Solar physics, Solar system science."* This paper prepares the ground for us, and highlights a very important difference with SDSS—unlike the Galaxy Zoo project that involved amateurs worldwide in the classification of survey objects, Gaia will automate the process.

Title: The Gaia Era: synergy between space missions and ground based surveys

Authors: [A. Vallenari](#), [R. Sordo](#)

[arXiv:0812.0293](#)

Metaphysical objects

Black Holes are an important part of modern cosmology, for example, the almost metaphysical luminosity that QSOs would demonstrate if they actually are at their redshift-supposed remoteness is explained in terms of their "Black Hole mass". Although BHs remain mere theoretical constructs without direct empirical support, they are incorporated axiomatically into cosmological modelling. The assumptions embedded in the titles of papers, and in the banners and captions of press releases, can be easily misconstrued. We are often told about "observed Black Holes" and now even hear hints of "observed Dark Matter", despite that this is surely impossible by definition. The

following paper is in fact describing a search for or uniquely linked to Black Holes.

Gamma Ray sources, which have not been positively

Title: Search for Primordial Black Holes with SGARFACE

Authors: [M. Schroedter, F. Krennrich, S. LeBohec, A. Falcone, S. J. Fegan, D. Horan, J. Kildea, A. W. Smith, J. Toner, T. C. Weekes](#)
[arXiv:0812.0546](#)

The following papers, for example, suggest some alternative gamma ray sources: “*Clusters are expected to emit gamma rays as a result of (1) a population of high-energy primary and re-accelerated secondary cosmic rays (CR) fueled by structure formation and merger shocks, active galactic nuclei and supernovae, and (2) particle dark matter (DM) annihilation.*”

Title: Gamma Rays from Clusters and Groups of Galaxies: Cosmic Rays versus Dark Matter

Authors: [Tesla E. Jeltema, John Kehayias, Stefano Profumo](#)
[arXiv:0812.0597](#)

Title: TeV neutrinos and gamma rays from pulsars

Authors: [A. Bhadra, R. K. Dey](#)
[arXiv:0812.1845](#)

Although assumptions are routinely made incorporating cosmological gamma ray events, the jury is still out on what the origin of observed GRBs might be, and it remains work-in-progress: “*GRB 080913, discovered by SWIFT, is the most distant gamma-ray burst (GRB) known to-date, with a spectroscopically determined redshift of $z=6.7$. The detection of a burst at such an early epoch of the Universe significantly constrains the nature of GRBs and their progenitors.*”

Title: On The Origin Of The Highest Redshift Gamma-Ray Burst GRB 080913

Authors: [Krzysztof Belczynski, Dieter H. Hartmann, Chris L. Fryer, Daniel E. Holz, Brian O'Shea](#)
[arXiv:0812.2470](#)

What we may find, and indeed have found in many cases, is that the circumstantial evidence for BHs can in fact be attributed to conventional compact objects. The second paper, finding evidence of an n-star at the core of SN1987a, comes hard on the heel of the loudly proclaimed “discovery” of a BH there.

Title: Neutron Stars as a Probe for Dense Matter

Authors: [V. Dexheimer, S. Schramm](#)

[arXiv:0812.0247](https://arxiv.org/abs/0812.0247)

Title: Evidence for a hard equation of state in the cores of neutron stars

Authors: [Chris Vuille](#)

[arXiv:0812.3828](https://arxiv.org/abs/0812.3828)

A paper by a team that includes particle physicist Glenn Starkman questions whether the presence of Black Holes and Dark Matter could would present a Universe as we see it, and answer, *“Probably not, because there are lots of manifestly unanthropic ways of producing entropy. We demonstrate that the Causal Entropic Principle (CEP), as a replacement for the anthropic principle to explain the properties of the observed universe, suffers from many of the same problems of adopting myopic assumptions in order to predict that various fundamental parameters take approximately the observed values. In particular, we demonstrate that four mechanisms – black hole production, black hole decay, phase transitions, and dark matter annihilations or decays – will manifestly change the conclusions of the CEP to predict that we should live in a universe quite different than the one in which we find ourselves.”*

Title: Replacing Anthropy with entropy: Does it work?

Authors: [Irit Maor](#), [Thomas W. Kephart](#), [Lawrence M. Krauss](#), [Y. Jack Ng](#), [Glenn D. Starkman](#)

[arXiv:0812.1015](https://arxiv.org/abs/0812.1015)

Dark Matter and dark Energy.

The abstract of the following paper states, *“In this work we review some of the theoretical efforts and experimental evidences related to Dark Matter and Dark Energy problems in the Universe. These dilemmas show us how incomplete our knowledge of gravitation is, and how our concepts about the Universe must at least be revised.”* In *The Dark Universe Riddle*, A. J. S. Capistrano summarises and analyses the current status of dark physics. He addresses the many problems that arise when physics is done this way, including the fact that the CMBR cannot be linked to a Big Bang unless >90% of universal energy density is represented by unknown, non-baryonic physics, and, most importantly for standard science, that Einstein’s concept of gravitation (from which LCDM model is drawn) is wholly inadequate. He concludes, *“...it calls for new gravitational theories far beyond Einstein’s approach...dark energy is a disturbed element of the universe...the Cosmological Constant problem is a fundamental problem...and its solution must come from a complete theory independent of particular models.”* How the Cosmological Constant problem could be addressed without reference to the expansion model is difficult to understand.

Title: The Dark Universe Riddle

Authors: [A. J. S. Capistrano](#), [P.I. Odon](#)

[arXiv:0812.1286](https://arxiv.org/abs/0812.1286)

Galactic and stellar evolution

The following paper admits that the super dense galaxies that are assumed to exist at high-z according to expanding universe model are practically non-existent at low-z. However, the 29 ultra dense galaxies they did find are all less than 0.4", well below SDSS's resolution, and may not hold up to further study. If, on the other hand, the Universe is not expanding, then distant galaxies are physically much larger and less dense, meaning that there are no ultra dense galaxies at any redshift.

Title: Overdensities of galaxies at $z \sim 3.7$ in CDF-S

Authors: [Eugene Kang, Myungshin Im](#)

[arXiv:0812.2814](https://arxiv.org/abs/0812.2814)

The findings of Finkelstein et al seem to suggest that Ly α galaxies evolve with decreasing redshift, supporting Big Bang linear evolution. They conclude, "*These objects thus appear to be significantly older and more massive than LAEs at high-redshift. We also find that these LAEs show a trend towards higher metallicity than those at high redshift, as well as a much tighter range of dust attenuation and interstellar medium geometry. These results suggest that low-redshift LAEs have evolved significantly from those at high redshift.*" Our interpretation is somewhat different, but we invite you to draw your own conclusions. This is a rich field for research, and is certainly one that demands the attention of anyone inclined to suggest a non-expanding Universe.

Title: Evolution of Lyman Alpha Galaxies: Stellar Populations at $z \sim 0.3$

Authors: [Steven L. Finkelstein, Seth H. Cohen, Sangeeta Malhotra, James E. Rhoads](#)

[arXiv:0812.0592](https://arxiv.org/abs/0812.0592)

Note on galaxy evolution: In terms of a universal evolutionary model, quasars are peculiar and may well be the key to our understanding of spatial relationships in astrophysics. It would be useful to refer to a 2005 presentation by Michael Strauss of the STScI and Princeton University [Active Galaxies at Low and High Redshift: Type II Quasars, Reionization, and Other Insights from the Sloan Digital Sky Survey](#). In this presentation, Dr Strauss makes the following points in reference to quasars with $z \cong 6.5$: 1) There was insufficient time for so much mass to accrete; 2) There was insufficient time for quasar metallicity to reach the observed level; 3) SDSS finds no evolution in the metallicities of quasars with redshift; and 4) Higher-redshift quasars would stand a much greater chance of being lensed, yet none of the $z = 5.7-6.5$ quasars in the SDSS survey is lensed.

Inflation

Inflation theory has run into more problems, which is to be expected is so complex a non-physical theory. The ACW inflationary model developed by Sean Ackerman and colleagues ("[Imprints of a Primordial Preferred Direction on the Cosmic Microwave Background](#)," *Phys. Rev. D* **75**, 083502; astro-ph/0701357) seemed to have explained some of these problems, but brought more of its own along with it. The vector fields are inherently unstable, as the following study by Carlo Contaldi and colleagues shows. In the authors' words, "*We prove that the anisotropic inflationary background of the Ackerman-Carroll-Wise model, characterized by a fixed-norm vector field, is unstable. We found the instability by explicitly solving the linearised equations for the most general set of perturbations around this background, and by noticing that the solutions diverge close to horizon crossing.*"

Title: Instability of the ACW model, and problems with massive vectors during inflation

Authors: [Burak Himmetoglu](#), [Carlo R. Contaldi](#), [Marco Peloso](#)

[arXiv:0812.1231](#)