



**ALTERNATIVE COSMOLOGY  
GROUP**

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## **The Alternative Cosmology Group Newsletter - May 2009**

The newsletter is distributed gratis to subscribers. Get onto our mailing list without obligation at [www.cosmology.info/newsletter](http://www.cosmology.info/newsletter). The current newsletter is a review of 881 papers published under astro-ph on arXiv for the month of April, 2009. If you have suggestions of papers you may have come across, please send them to Hilton or Eric.

We apologise for having missed a paper by Charles Francis and Erik Anderson in the April newsletter, which shows the existence of an unmodelled component of spectral shift in the motions of local stars, consistent with the notion that the flattening of galaxy rotation curves is due neither to MOND nor CDM, but is due to a fault in cosmological models.

Title: **Indications of an Unmodelled Component in Spectrographic Measurements of Local Stars**

Authors: [Charles Francis](#), [Erik Anderson](#)

<http://arxiv.org/abs/0903.5193>

In a departure from normal practice, we pre-empt the publication of a formal paper by referring to a report carried in the media about the THEMIS discovery of tornado-like power generators in nearby interplanetary space. They apparently exceed 100,000 amps each, and can be positively linked to several terrestrial processes, including auroral activity. These so-called “space tornados” are in fact plasma flow vortices with rotational velocities approaching 2 million km hr<sup>-1</sup>. The lead author of the study is Andreas Keiling of UC Berkeley’s Space Science Laboratory, and the published paper will be featured here as soon as it is available. The link takes you to the article in *Astronomy* magazine.

<http://www.astronomy.com/asy/default.aspx?c=a&id=8181>

### **CMBR**

Richard Lieu, together with Jiang and Zhang, performed a test on the black body nature of the first acoustic peak in WMAP5 data. Not only did it return a non-black body, the results also show clear hemispherical anisotropy. “*In*

particular, should future attempts in demonstrating the non-cosmological origin of (degree-scale fluctuations) continue to prove difficult, it would mean that degree scale departures from the acoustic model of perturbations is occurring on the last scattering surface at the 4 – 5 % level, and moreover the behavior varies significantly from one half of the universe to another.”

[380] Title: **Spectral variation of the WMAP 5-year degree scale anisotropy**

Authors: [Bi-Zhu Jiang](#), [Richard Lieu](#), [Shuang-Nan Zhang](#)

[arXiv:0904.2513](#)

Carlos Gutierrez is a frequent contributor to this newsletter, usually as co-author of Martin Lopez-Corredoira. Here he is a member of a team establishing a direct correlation between CMBR anisotropy and astrophysical structure. “The region subtended by the VSA cold spot has an overpopulation of galaxies as compared with mean values in random selected areas of the sky...we showed that the density of galaxies within the spot is ~1.6–3.0 higher than the mean value in such control fields with little dependence on the restrictions applied in magnitudes and/or colours. Only in ~1–3% of such random regions the density of galaxies is larger than in the VSA cold spot.”

[27] Title: **The spatial distribution of galaxies within the CMB cold spot in the Corona Borealis supercluster**

Authors: [C.P. Padilla-Torres](#), [C.M. Gutierrez](#), [R. Rebolo](#), [R. Genova-Santos](#), [J.A. Rubino-Martin](#)

[arXiv:0904.0147](#)

This is another study showing alignment of anisotropies with foreground structure, in this case interaction between Sgr A and the ecliptic plane. Increasingly, analyses show that the surrounding radio fog is not in fact extreme background radiation, nor is it isotropic, both factors that mitigate against any link with Big Bang.

[265] Title: **A Model For The WMAP Anomalous Ecliptic Plane Signal**

Authors: [H.N. Sharpe](#)

[arXiv:0904.1697](#)

“The unexplained orientation of large-scale patterns of CMB maps in respect to the ecliptic frame is one of the biggest surprises in CMB studies. These apparent anomalies, if found to be cosmological origin, will pose a big challenge to the standard model of cosmology...[ ]...in this work we further check the WMAP data for the correlation between pixel temperature  $t$  and observation number  $N$ . A systematic effect of imbalance differential observation and significant  $t$ - $N$  correlation in magnitude, distribution non-Gaussianity and north-south asymmetry are detected...”

[13] Title: **Observation number correlation in WMAP data**

Authors: [Ti-Pei Li](#), [Hao Liu](#), [Li-Ming Song](#), [Shao-Lin Xiong](#), [Jian-Yin Nie](#)

[arXiv:0905.0075](#)

## **Gravitation**

The following paper provides a comprehensive theoretical framework for aether-driven gravitation.

[136] Title: **Aether Unleashed**

Authors: [Cristian Armendariz-Picon](#), [Alberto Diez-Tejedor](#)

[arXiv:0904.0809](#)

Virginia Trimble and Vicent Martinez produced this gem of a paper from their invited talk at the conference *Cosmology across Cultures* in Granada, Spain, in 2008. After reading a pre-publication draft, Rocky Kolb commented as follows: *“Our goal must not be a cosmological model that just explains the observations, the ingredients of the cosmological model must be deeply rooted in fundamental physics. Dark matter, dark energy, modified gravity, mysterious new forces and particles, etc., unless part of an overarching model of nature, should not be part of a cosmological model. We may propose new ideas, but they must wither unless nourished by fundamental physics.”*

[185] Title: **Cosmologists in the dark**

Authors: [Vicent J. Martinez](#), [Virginia Trimble](#)

[arXiv:0904.1126](#)

## **Galaxy modelling**

Much of the Standard Model is built upon uncertainties in component sub-models. Charlie Conroy and colleagues warn against the propagation of uncertainties: *“The interpretation of the resulting uncertainties in the derived colors is highly non-trivial because many of the uncertainties are likely systematic, and possibly correlated with the physical properties of galaxies. We therefore urge caution when comparing models to observations.”*

[1] Title: **The propagation of uncertainties in stellar population synthesis modeling II: The challenge of comparing galaxy evolution models to observations**

Authors: [Charlie Conroy](#), [Martin White](#), [James E. Gunn](#)

[arXiv:0904.0002](#)

The following paper does precisely what Dr Conroy warns against, with inevitable anomalies: *“The current consensus is that galaxies begin as small density fluctuations in the early Universe and grow by in situ star formation and hierarchical merging. Stars begin to form relatively quickly in sub-galactic sized building blocks called haloes which are subsequently assembled into galaxies. However, exactly when this assembly takes place is a matter of some debate. Here we report that the stellar masses of brightest cluster galaxies, which are the most luminous objects emitting stellar light, some 9 billion years ago are not significantly different from their stellar*

masses today. *Brightest cluster galaxies are almost fully assembled 4-5 Gyrs after the Big Bang, having grown to more than 90% of their final stellar mass by this time. Our data conflict with the most recent galaxy formation models based on the largest simulations of dark matter halo development.*”

[4] Title: **Early assembly of the most massive galaxies**

Authors: [Chris A. Collins](#) et al

[arXiv:0904.0006](#)

## **Galaxy evolution**

Central to the idea that the redshift-mapped Universe is simultaneously expanding and evolving from an immature state, is the constraint that functional and morphological evolutionary phases of galaxies should correlate with redshift—the higher the redshift, the more immature the galaxy, as a rule. This is not borne out by observation. Galaxy evolution is correlated with environment, irrespective of redshift. *“There is no shortage of evidence that galaxy properties vary systematically with the environment in which they reside. The distributions of star formation histories, morphologies and masses, all strongly depend on galaxy location, at all redshifts probed so far.”*

[726] Title: **The ESO Distant Cluster Sample: galaxy evolution and environment out to  $z=1$**

Authors: [Bianca M. Poggianti](#), et al

[arXiv:0904.4558](#)

## **Quasars**

The intentions of the authors seems innocuous enough: *“For the first time spectroscopic galaxy redshift surveys are reaching the scales where galaxies can be studied together with the nearest quasars. This gives an opportunity to study the dependence between the activity of a quasar and its environment in a more extensive way than before. We study the spatial distribution of galaxies and groups of galaxies in the environments of low redshift quasars in the Sloan Digital Sky Survey (SDSS). Our aim is to understand how the nearby quasars are embedded in the local and global density field of galaxies and how the environment affects quasar activity”*.

The question that must be asked, however, is how any comprehensive study of the relationship between quasars and galaxies could possibly ignore the work and publications in the field, over a period of four decades, of Dr Halton Arp.

[96] Title: **Environments of Nearby Quasars in Sloan Digital Sky Survey**

Authors: [H. Lietzen](#), et al

[arXiv:0904.0558](#)

## **Redshift**

Despite the promise of its title, this paper disappoints for not realising a fuller potential. Solar spectral shifts are taken to be exclusively Doppler effects, and the dual instruments are aimed at opposing approaching and receding

limbs. The University of Birmingham *Solar Oscillations Network* (BiSON) instruments are especially suited to high resolution measurements of the non-Doppler component of solar redshifts (the solar centre-to-limb differential). There is thus potential for a useful collaboration between Dr Broomhall's team and anyone investigating non-Doppler redshifts.

[647] Title: **New aspects of Doppler imaging in Sun-as-a-star observations**

Authors: [A. M. Broomhall](#), [W. J. Chaplin](#), [Y. Elsworth](#), [R. New](#)

[arXiv:0904.4122](#)

## **Miscellaneous**

The following paper is featured for the novelty of its title alone; the content redefines the term “esoteric”.

The authors conclude, “*The observations show that the parameter  $\alpha$  is indeed smaller than 1/2, so the late-time behavior of RDE is really like a phantom energy. Therefore, it seems that the big rip is inevitable in this model. On the other hand, since the RDE model originates from the holographic model that is based on the effective field theory with an UV/IR duality, the big rip seems inconsistent with the theoretical framework. In order to avoid the big rip, we appeal to the extra dimensions. We consider the story of the holographic Ricci dark energy in a braneworld cosmology, and we find that, interestingly, a steady state future occurs, in stead of the big rip.*”

[787] Title: **Holographic Ricci Dark Energy in Randall-Sundrum Braneworld: Avoidance of Big Rip and Steady State Future**

Authors: [Chao-Jun Feng](#), [Xin Zhang](#)

[arXiv:0904.0045](#)