Monthly Notes of the Alternative Cosmology Group – June 2010

The ACG Webmaster who distributes this newsletter to subscribers would prefer not to receive related correspondence.

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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 1,136 papers published on arXiv under astro-ph, together with 580 under gen-phys, for the month of May, 2010. 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. We prefer observational results and tend to avoid complete cosmologies and purely theoretical work. Discussion of method is welcome. 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".

Readers may note changes to the layout and format of the notes this month. Our appreciation goes to Ian Tresman who wrote that it was confusing in some respects, and suggested some improvements. Hopefully, what follows is more reader-friendly. Please let me know.

I. Visit to Greece

ACG founding member Eric Lerner will be visiting Greece in July, from the 7th to the 27th, and would welcome the opportunity to meet up with ACG members while he is there. If you think you might be in a position to take up Eric's invitation, please contact him directly by email at elerner@igc.org.

II. Big Bang Theory

1. **Title: Big Bang? A Critical Review**
   Authors: Ashwini Kumar Lal
   viXra: 1005.0051

Quote: *"This paper examines a few of the various factors which undermine the theory of the big Bang, including the organization of galactic superstructures, the Cosmic Microwave Background, distant galaxies, gravitational waves, redshifts, and the age of local galaxies."*

2. **Title: Impact on cosmology of the celestial anisotropy of the short gamma-ray bursts**
   Authors: Attila Meszaros, Lajos G. Balazs, Zsolt Bagoly, Peter Veres
   arXiv:1005.1558
   Quote: *"Recently the anisotropy of the short gamma-ray bursts detected by BATSE was announced (Vavrek et al. 2008). The impact of this discovery on cosmology is discussed. It is shown that the anisotropy found may cause the breakdown of the cosmological principle."*

3. **Title: Revisit of Cosmic Age problem**
Authors: Shuang Wang, Xiao-Dong Li, Miao Li

   Quote: *"By evaluating the age of the universe in the Lambda CDM model with the observational constraints from the SNIa, the BAO, the CMB, and the independent H_0 measurements, we find that the existence of 5 globular clusters and 1 high-z quasar are in tension (over 2 sigma confidence level) with the current cosmological observations. So if the age estimates of these objects are correct, the cosmic age puzzle still remains in the standard cosmology."*

III. Evolution with redshift

1. **Title: A fundamental relation between mass, SFR and metallicity in local and high redshift galaxies**
   Authors: F. Mannucci, G. Cresci, R. Maiolino, A. Marconi, A. Gnerucci
   arXiv:1005.0006
   Quote*: "At low stellar mass, metallicity decreases sharply with increasing SFR, while at high stellar mass, metallicity does not depend on SFR. High redshift galaxies, up to z~2.5 are found to follow the same FMR defined by local SDSS galaxies, with no indication of evolution. The evolution of the mass-metallicity relation observed up to z=2.5 is due to the fact that galaxies with progressively higher SFRs, and therefore lower metallicities, are selected at increasing redshifts, sampling different parts of the same FMR."*

2. **Title: An explanation for the cosmological redshift**
   Authors: Dean Mamas
   arXiv: Phys. Essays **23**, 326 (2010) http://link.aip.org/link/?PHESEM/23/326/1

IV. Redshift

1. **Title: A Brief and Elementary Note on Redshift**
   Authors: José Francisco García Juliá
   viXra:1005.0097
   Quote: *"A reasonable explanation of both redshifts: cosmological (without expansion of the universe) and intrinsic, is given using a single tired light mechanism. In the first case, the redshift is produced because the light interacts with microwaves. In the second, the interaction is with radio waves. And all this is compatible with a static universe with a space temperature of 2.7 ^{o}K."*

2. **Title: Another Explanation of the Redshifts of the Pair Quasar-Galaxy NGC 7319**
   Authors: José Francisco García Juliá
   viXra:1005.0010
   Quote: *"The excess of redshift of the quasar might be produced in its interior by the transference of heat from the light waves to the radio waves."*

3. **Title: New formulae for the Hubble Constant in a Euclidean Static Universe**
   Authors: Zaninetti Lorenzo
   arXiv:1005.0263
   Quote: *"It is shown that the Hubble constant can be derived from the standard luminosity function of galaxies as well as from a new luminosity function as deduced from the mass-luminosity relationship for galaxies. An analytical expression for the Hubble constant can be found from the maximum number of galaxies (in a given solid angle and flux) as a function of the redshift. A second analytical definition of the Hubble constant can be found from the redshift averaged over a given solid angle and flux. The analysis of two luminosity functions for galaxies brings to four the new definitions of the Hubble constant. The equation that regulates the Malmquist bias for galaxies is derived and as a consequence it is possible to extract a complete sample."*

4. **Title: An explanation for the cosmological redshift**
   Authors: Dean Mamas
   arXiv: Phys. Essays **23**, 326 (2010) http://link.aip.org/link/?PHESEM/23/326/1

V. CMBR anomalies

1. **Title: Probing non-Gaussianities on Large Scales in WMAP5 and WMAP7 Data using Surrogates**
   Authors: C. Raeth, G. Rossmanith, G. Morfill, A. J. Banday, K. M. Gorski
   arXiv:1005.2481
   Quote: *"Using scaling indices as test statistics we find highly significant signatures for both non-Gaussianities and asymmetries on large scales for the WMAP data of the CMB. We find remarkably similar results when analyzing different ILC-maps based on the WMAP five and seven year data. Such features being independent from the map-making procedure would disfavor the fundamental principle of isotropy as well as canonical single-field slow-roll inflation - unless there is some undiscovered systematic error in the collection or reduction of the CMB data or yet unknown foreground contributions."*

2. **Title: Testing large-angle deviation from Gaussianity in CMB maps**
   Authors: A. Bernui, M.J. Reboucas, A.F.F. Teixeira
   arXiv:1005.0883
   Quote: *"A detection of the level of non-Gaussianity in the CMB data is essential to discriminate among inflationary models and also to test alternative primordial scenarios. However, the extraction of primordial non-Gaussianity is a difficult endeavor since several effects of non-primordial nature can produce non-Gaussianity."*

3. **Title: Anomalous variance in the WMAP data caused by Galactic Foreground residuals**
   Authors: M. Cruz, P. Vielva, E. Martínez-González, R. B. Barreiro
   arXiv: arXiv:1005.1264
   Quote: *"These residuals would affect the estimation of the angular power spectrum from the WMAP data, which is used to generate Gaussian simulations, giving rise to an inconsistency between the estimated and expected CMB variance. We also find that removing the quadrupole from data and simulations the significance drops. Moreover, we show that a violation of Gaussianity and/or isotropy could be a further cause of the low variance. Galactic foreground residuals affect in some extent the quadrupole and are highly anisotropic, however we cannot discard the presence of alternative causes such as for instance systematic errors. This anomaly could also affect the estimation of the cosmological parameters."*

4. **Title: Can one reconstruct masked CMB sky?**
   Authors: R. Aurich, S. Lustig
   arXiv:1005.5069

Quote: *"The CMB maps obtained by observations always possess domains which have to be masked due to severe uncertainties with respect to the genuine CMB signal. Cosmological analyses ideally use full CMB maps in order to get e.g. the angular power spectrum. There are attempts to reconstruct the masked regions at least at low resolutions, i.e. at large angular scales, before a further analysis follows. In this paper, the quality of the reconstruction is investigated for the ILC (7yr) map as well as for 1000 CMB simulations of the LambdaCDM concordance model. The latter allows an error estimation for the reconstruction algorithm which reveals some drawbacks. The analysis points to errors of the order of a significant fraction of the mean temperature fluctuation of the CMB."*

5. **Title: Giant Rings in the CMB Sky**
   Authors: Ely D. Kovetz, Assaf Ben-David, Nissan Itzhaki
   arXiv:1005.3923

VI. Method

1. **Title: Inhomogeneity and the foundations of concordance cosmology**
   Authors: Chris Clarkson Roy Maartens
   arXiv:1005.2165
   Quote: *"The apparent accelerating expansion of the Universe is forcing us to examine the foundational aspects of the standard model of cosmology -- in particular, the fact that dark energy is a direct consequence of the homogeneity assumption. We discuss the foundations of the assumption of spatial homogeneity, in the case when the Copernican Principle is adopted. We present results that show how (almost-) homogeneity follows from (almost-) isotropy of various observables. The analysis requires the fully nonlinear field equations -- i.e., it is not possible to use second- or higher-order perturbation theory, since one cannot assume a homogeneous and isotropic background. Then we consider what happens if the Copernican Principle is abandoned in our Hubble volume. The simplest models are inhomogeneous but spherically symmetric universes which do not require dark energy to fit the distance modulus. Key problems in these models are to compute the CMB anisotropies and the features of large-scale structure. We review how to construct perturbation theory on a non-homogeneous cosmological background, and discuss the complexities that arise in using this to determine the growth of large-scale structure."*

2. **Title: Testing the Distance-Duality Relation with Galaxy Clusters and Supernovae Ia**
   Authors: R. F. L. Holanda, J. A. S. Lima, M. B. Ribeiro
   arXiv:1005.4458
   Quote: *"In the best scenario (linear parametrization) we obtain (...) for de Fillipis et al. sample (eliptical geometry), a result only marginally compatible with the DD relation. However, for Bonamente et al. sample (spherical geometry) the constraint is (…) which I clearly incompatible with the duality-distance relation."*

VII. Titles of the month

1. **Title: Testing the No-Hair Theorem with Observations in the Electromagnetic Spectrum: II. Black-Hole Images**
   Authors: Tim Johannsen, Dimitrios Psaltis
   arXiv:1005.1931

2. **Title: Chameleon Cosmology Model Describing the Phantom Divide Line Crossing**

   Authors: F. Cannata, A.Yu. Kamenshchik

   arXiv:1005.1878