Monthly Notes of the Alternative Cosmology Group – April 2010

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 1,104 papers published on arXiv under astro-ph, together with 639 under gen-phys, for the month of March, 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".

The emphasis in the arXiv astro-ph catalogue continues to grow in the direction of purely theoretical, model-dependent studies, with a consequently smaller pie-slice representing the type of empirically derived, observationally based results preferred for this list. This has let to subsets of research initiatives which despite their internal consistency, may be based upon historical assumptions which more recent, independent enquiries have shown to be uncertain at best. Evolutionary timelines for galaxies are based largely upon star birth rates, themselves dependent upon metallicity and colour. The interpretations of spectral data and colours are inherently model-dependent, and the possibility exists that some deeply embedded principles underpinning the models would not stand modern scrutiny. Is the abundance of heavy metals directly or inversely proportional to stellar age? Or neither? Cosmologists appear inclined to take an opportunistic stance on this issue, and the results being published are ambiguous at best.

[951] arXiv:1003.6026

Title: When are extremely metal-deficient galaxies extremely metal-deficient?

Authors: B. Ekta, Jayaram N. Chengalur

CCC2 Proceedings Volume

For those who may have missed it, here is the notification of CCC2 proceedings publication.

Thanks to the almost single-handed efforts of Frank Potter, the proceedings volume of the *2nd Crisis in Cosmology Conference* has now been published and is available for purchase. It is very well turned out indeed and well worth the purchase price. It is a highly recommended reference work in contemporary cosmology. Here is Frank's letter explaining the purchase procedure:

Dear CCC-2 Participant,

(1) I now have the 2nd Crisis in Cosmology, CCC-2 proceedings book ready for purchase by credit card through Paypal (or by Cashier's Check or Money Order).

(2) To place your order (or check out the TOC) go to:

http://www.sciencegems.com/CCC2/CCC2proceedings.html

N.B. I will send you the book as soon as I know you have ordered and have your address.

(3) There are 3 different rates:

(i) U.S. shipping address ($13.45, 3-4 days)

(ii) Canada or Mexico ($22.39, 6 - 10 days)

(iii) International ($25.23, 6 - 10 days).

(4) Note that these rates offer a considerable savings over the $65 normal price plus shipping charges.

(5) If you buy the book, you will also have online ebook access to this proceedings after I send the publisher the list of buyers.

(6) Note that the last article in the proceedings is a wonderful summary article that includes predictions for critical cosmological measurements that is based upon talks about the different conjectured cosmologies given at both Crisis in Cosmology conferences.

Thank you,

Frank Potter

Press coverage

The *Times of India* has given substantial coverage to some recent scientific results refuting Big Bang Theory. In his paper "Big Bang? A Critical Review", Ashwini Kumar Lal says: *"There is a growing body of evidence which demonstrates the Universe could not have begun with a Big Bang 13.75 billion years ago. Indeed, the day may come when it is determined there never was a Big Bang and cosmologists of the future will only gaze back in wonder at how anyone could have believed in a creation event which was refuted by so much contradictory evidence."*

http://timesofindia.indiatimes.com/india/Indian-US-scientists-question-Big-Bang-theory/articleshow/5761894.cms

Books

Here are some suggested titles for our members' book list. Thank you.

1. Author: Avtar Singh, Sc. D. *The Hidden Factor: An Approach for Resolving Paradoxes of Science, Cosmology and Universal Reality* (AuthorHouse, 2003).

2. Author: Bernard R. Bligh *The Big Bang Exploded! Cosmology Corrected, A Commentary with Thermodynamics* (Self published).
3. Author: John Moffat *Redefining Gravity* (http://www.amazon.com/dp/0061170887)
4. Authors: J. Narlikar and G. Burbidge *Facts and Speculations in Cosmology* (Cambridge, 2008).

Expansion/Evolution/Nucleosynthesis

"The current total (core-collapse + Ia) SN rate in the MCs is 2.5-4.6 SNe per millennium (68% c.l. + systematics), or 1.7-3.1 SNuM [SNe/100 yr/10^{10}Msun], in agreement with the historical record and with rates measured in other dwarf irregulars. Conversely, assuming the SNRs are in free expansion, rather than in their Sedov phase, would impose on the SNRs a maximum age of 6 kyr, and would imply a MC SN rate per unit mass that is 5 times higher than in any type of galaxy, and a low-mass limit for core-collapse progenitors in conflict with stellar evolution theory."

[475] arXiv:1003.3031

Title: The supernova rate and delay times in the Magellanic Clouds

Authors: Dan Maoz, Carles Badenes

"The age of an individual star cannot be measured, only estimated through mostly model-dependent or empirical methods, and no single method works well for a broad range of stellar types or for a full range in age. This review presents a summary of the available techniques for age-dating stars and ensembles of stars, their realms of applicability, and their strengths and weaknesses. My emphasis is on low-mass stars because they are present from all epochs of star formation in the Galaxy and because they present both special opportunities and problems. The ages of open clusters are important for understanding the limitations of stellar models and for calibrating empirical age indicators. For individual stars, a hierarchy of quality for the available age-dating methods is described. Although our present ability to determine the ages of even the nearest stars is mediocre, the next few years hold great promise as asteroseismology probes beyond stellar surfaces and starts to provide precise interior properties of stars and as models continue to improve when stressed by better observations."

[961] arXiv:1003.6074

Title: The Ages of Stars

Authors: David R. Soderblom

Black Holes

"In this chapter I focus on asking and answering the following questions: (1) What is a black hole? Answer: There are three types of black holes, namely mathematical black holes, physical black holes and astrophysical black holes. An astrophysical black hole, with mass distributed within its event horizon but not concentrated at the singularity point, is not a mathematical black hole. (2) Can astrophysical black holes be formed in the physical universe? Answer: Yes, at least this can be done with

gravitational collapse. (3) How can we prove that what we call astrophysical black holes are really black holes? Answer: Finding direct evidence of event horizon is not the way to go. Instead I propose five criteria which meet the highest standard for recognizing new discoveries in experimental physics and observational astronomy. (4) Do we have sufficient evidence to claim the existence of astrophysical black holes in the physical universe? Answer: Yes, astrophysical black holes have been found at least in some galactic binary systems, at the center of almost every galaxy, and as the central engines of at least some long gamma-ray bursts. (5) Will all matter in the universe eventually fall into black holes? Answer: Probably "no", because "naked" compact objects, if they do exist with radii smaller than the radii of event horizons for their masses but are not enclosed by event horizons, can rescue the universe from an eternal death by re-cycling out the matter previously accreted into astrophysical black holes. Finally I also discuss briefly if we need a quantum theory of gravity in order to further understand astrophysical black holes, and what further astronomical observations and telescopes are needed to make further progress on our understanding of astrophysical black holes."

[46] arXiv:1003.0291

Title: Astrophysical Black Holes in the Physical Universe

Authors: Shuang-Nan Zhang

"The theory of black holes states that without the energy set free by nuclear fusion, the gravity of a big star will always be stronger than all other forces, causing it to collapse and ending in a singularity. During such a collapse, however, gravity itself should free enough binding energy to ultimately prevent the star from collapsing to a state where its escape velocity reaches the speed of light."

[158] **viXra:1003.0176** **[pdf]** *submitted on 15 Mar 2010*

Title: Gravitational Limits

Authors: Willi Penker

Aether

"*I will examine the reaction of the Michelson interferometer, which has as light's carrier of orthogonal beams various media with refractive indices in the interval of values 1 < n < 1.8. In the article [Phys.Lett.A 374 (2010) 1110] I reported on the measuring the projection (on the plane of the horizon) of the absolute velocity of the Earth relative to the aether at a latitude of Obninsk at different times of day and night that was found to be significantly distinct from zero and change in the range 140-480 km/sec.*"

[212] gen-phys arXiv:1003.2899

Title: What and how does a Michelson interferometer measure?

Authors: V.V. Demjanov

Dark Matter/Dark Energy

"The universe has evolved to be a filamentary web of galaxies and large inter-galactic zones of space without matter. The Euclidian nature of the universe indicates that it is not a 3D manifold within space with an extra spatial dimension. This justifies our assumption that the FRW space-time evolves in the inter-galactic zones like separate FRW universes. Thus we do not necessarily have to consider the entirety of the universe. Our assumption enables us to prove that: -In the current epoch, space in the intergalactic zones expands at a constant rate. -In and around galaxies, space expansion is inhibited. With these results, and an extended Gauss Theorem for a deformed space, we show that there is no need for the hypothetical Dark Energy (DE) and Dark Matter (DM) to explain phenomena attributed to them."

[824] arXiv:1003.5092

Title: A Universe without Dark Energy and Dark Matter

Authors: Shlomo Barak, Elia M. Leibowitz

Redshift

"It is proposed that there has been a longstanding misunderstanding of the relationship between scale factor of the universe and redshift. It is shown how value of omega(matter) of one quarter of the true value, (hence the apparent dark energy phenomenon) can result from such a misconception. Predictions for the magnitudes of supernovae against redshift are made and found to be in good agreement with supernovae data, without dark energy."

[165] **viXra:1003.0222**

Title: On the Scale Factor of the Universe and Redshift.

Authors: John Hunter

The authors of this study have found systematic biases in redshifts in the SDSS catalogue of ~600km sec^{-1} over small and large redshift intervals. Researchers using SDSS data are advised to take note of this.

[470] http://arxiv.org/abs/1003.3017

Title: Improved redshifts for SDSS quasar spectra

Authors: Paul C. Hewett , Vivienne Wild

"This work summarises some of the attempts to explain the phenomenon of dark energy as an effective description of complex gravitational physics and the proper interpretation of observations. Cosmological backreaction has been shown to be relevant for observational (precision) cosmology, nevertheless no convincing explanation of dark energy by means of backreaction has been given so far."

[473] arXiv:1003.3026

Title: Cosmological backreaction

Authors: Dominik J. Schwarz

CMBR anomalies

"Several anomalies appear to be present in the large-angle cosmic microwave background (CMB) anisotropy maps of WMAP, including the alignment of large-scale multipoles and a hemispheric asymmetry. Models in which isotropy is spontaneously broken (e.g., by a scalar field) have been proposed as explanations for these anomalies, as have models in which a preferred direction is imposed during inflation. We examine models inspired by these, in which isotropy is broken by a multiplicative factor with dipole and/or quadrupole terms. We evaluate the evidence provided by these anomalies using a Bayesian framework, finding that the evidence in favor of the model is generally weak. We also compute approximate changes in estimated cosmological parameters in the broken-isotropy models. Only the overall normalization of the power spectrum is modified significantly."

[876] arXiv:1003.5548

Title: Cosmic microwave background constraints on cosmological models with large-scale isotropy breaking

Authors: Haoxuan Zheng, Emory F. Bunn

Electricity?

Comets have over the last two decades or so provided useful fields of investigation into possible electrical effects in astrophysical objects, particular with regards to their abrupt and repeated fissioning. Comet Holmes is a recent example.

[690] arXiv:1003.4308

Title: Transient Fragments in Outbursting Comet 17P/Holmes

Authors: Rachel Stevenson, Jan Kleyna, David Jewitt

Titles of the month

[520] gen-phys arXiv:1003.2688

Title: WARNING: Physics Envy May Be Hazardous To Your Wealth!

Authors: Andrew W. Lo, Mark T. Mueller

Do the authors hereby propose that the "Fractal Structure Filaments" are somehow progenitor objects, and therefore distinct from the Universe?

[354] gen-phys arXiv:1003.5016

Title: Birth of Universe following Rupture of Fractal Structure Filaments

Authors: Valentin A. Rantsev-Kartinov, Christian G. Parigger

"We study a model of opinion formation where the opinions in conflict are not equivalent. This is the case when the subject of the decision is to respect a norm or a law. In such scenarios, one of the possible behaviors is to abide by the norm and the other to ignore it. The evolution of the dynamics is implemented through an imitation mechanism, in which agents can change their opinions based on the opinions of a set of partners and their own state. We determine, for different social situations, the minimum percentage of supporters of the law necessary to arrive at a state of consensus of law abiders."

[370] arXiv:1003.5166

Title: Do the right thing

Authors: M.F. Laguna, G. Abramson, S. Risau-Gusman, J.R. Iglesias