



ALTERNATIVE COSMOLOGY GROUP

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The Alternative Cosmology Group Newsletter – January 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 1135 papers published on arXiv under astro-ph, together with 471 under gen-phys, for the month of December, 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”.

ACG member and CCC2 contributor Chuck Gallo has asked for help:

“I need help from someone who is intimately familiar with Quasar spectral data to search for the following.

Quasars might exhibit a large amount of carbon in their spectra.

- 1. Quasars might exhibit a large amount of hydrogen in their spectra. This seems to be the case with the strong hydrogen alpha absorption exhibited by Quasars.*
- 2. Quasars might exhibit complex molecular spectra. This might be the source of the Forest of Lines observed in association with the hydrogen alpha absorption.*
- 3. Strongly redshifted lines may be considerably broadened.(5) Quasars may have large amounts of “dust” in their surrounding atmospheres.*

Longer term, maybe observational astronomers who might be able to collect such spectral data if not already available.”

Anyone who may be able to assist Chuck, either directly or by reference, please contact him by email at chuckgallo@comcast.net.

Speed of light

We greatly appreciate commentary on the following paper in response to a preview mailing. General reaction to Gezari’s experimental demonstration that light speed depends on the motion of the observer or measuring device has been along

the lines of “*nice try, but it’s incorrect.*” If the conclusion reached by Gezari were indeed valid, it would confirm Dayton Miller’s re-run of the Michelson-Morley experiment, the $c + v$, $c - v$ given by Sagnac’s experiment on a rotating table, and Tom van Flandern’s GPS adjustments. The implications for physics of such a discovery would be enormous, but it is still elusive. Our thanks go to Laurence Hecht, Reg Cahill, Peter Walsh, Bruce Rout, and Nigel Wakefield for their comments.

“The speed of laser light pulses launched from Earth and returned by a retro-reflector on the Moon was calculated from precision round-trip time-of-flight measurements and modeled distances. The measured speed of light (c) in the moving observers rest frame was found to exceed the canonical value $c = 299,792,458$ m/s by 200 ± 10 m/s, just the speed of the observatory along the line-of-sight due to the rotation of the Earth during the measurements. This is a first-order violation of local Lorentz invariance; the speed of light seems to depend on the motion of the observer after all, as in classical wave theory, and implies that a preferred reference frame exists for the propagation of light. However, the present experiment cannot identify the physical system to which such a reference frame might be tied.”

[261] [arXiv:0912.3934](https://arxiv.org/abs/0912.3934)

Title: Lunar Laser Ranging Test of the Invariance of c

Authors: [Daniel Y. Gezari](#)

Supernovae/Distance ladder/standard candles

Fundamental to the notion of accelerating cosmological expansion is the assumption of IA supernovae as standard candles. However, several exceptions have been found, bringing into question whether they are in fact standard candles at all. It is interesting to note that the authors of the following study include Bob Kirshner. *“SNe Ia have been very successfully modeled as a one-parameter family, and this is fundamental to their use as cosmological distance indicators. SN 2006bt is a challenge to that picture, yet its relatively normal light curves allowed SN 2006bt to be included in cosmological analyses.”*

[52] [arXiv:0912.0263](https://arxiv.org/abs/0912.0263)

Title: SN 2006bt: A Perplexing, Troublesome, and Possibly Misleading Type Ia Supernova

Authors: [Ryan J. Foley](#), et al

Bob Kirshner and colleagues are now regularly finding features of 1a SNe that conflict with their model.

[188] [arXiv:0912.0929](https://arxiv.org/abs/0912.0929) [[pdf](#), [other](#)]

Title: Hubble Residuals of Nearby SN Ia Are Correlated with Host Galaxy Masses

Authors: [Patrick L. Kelly](#), [Malcolm Hicken](#), [David L. Burke](#), [Kaisey S. Mandel](#), [Robert P. Kirshner](#)

Gravitational lenses

The overwhelming observational evidence of anomalously close angular proximity of quasars to central active galaxies produced *inter alia* by Arp, Fulton, Burbidge, and López-Corredoira has been increasingly countered by invoking gravitational

lensing as an explanation. To date, about 100 lensing candidates have been catalogued, about half of which were identified in the SDSS. Although this is a very small fraction of the associations listed by the above investigators—the Cosmic Lens All-Sky Survey found only 22 possible lenses out of ~16,000 radio sources—the impression is being created in the literature that the anomalous alignments can thereby be accommodated in the Standard Model of Cosmology. However, there are caveats which are being overlooked by proponents of quasar lensing. Many if not all of the 100 candidates can be observationally ruled out as lenses, although they already carry that title in most publications on the subject. For example, the most-cited lens of all, the Einstein Cross, has been ruled out spectroscopically by the discovery of gas fields physically linking the supposed lensed images to the nucleus. The methods used to identify lensing candidates are model-dependent and freely adjustable, and contra-evidence is either not sought or ignored. Hence, the cataloguing of lensing candidates is a fruitful field of endeavour for those of investigating cosmological redshift. The following paper adds eight new lensing candidates to the SDSS Quasar Lensing Survey, all of which are open to challenge by objective observers:

“We modeled all eight systems to see whether the lensing hypothesis is reasonable from the theoretical point of view... First we fit each system with two stellar components using stars near the systems as point spread function (PSF) templates. There remained significant extended residuals between the point sources after subtracting the best-fit model for all systems. We then added a galaxy modeled by a Sérsic profile to the fit and found virtually no residuals. Because of the small number of observational constraints for two image lenses, we limited the model to a singular isothermal ellipsoid (SIE) without any external shear. This mass model has five parameters: the lens position, the Einstein radius R_E , ellipticity e , and position angle Θ_e (measured east of north). If we fit the relative positions and the image flux ratio, these two image lenses provide only five constraints, so our model has no degrees of freedom and we can find a perfectly fitting model with $\chi^2 \sim 0$ as long as the model is reasonable. ... All eight lenses are two image quasar lenses produced by galaxy-scale lens potentials. They were confirmed to be lenses by imaging and spectroscopic observations using the UH88 and Subaru telescopes. Simple mass models also suggest that the observed image configurations and fluxes are reasonable for lens systems. For SDSS J1620+1203, the redshift of the lens galaxy was determined from the absorption lines in the spectrum of the fainter quasar... We estimated likely redshifts of the lens galaxies from the observed I band magnitudes using the modified Faber-Jackson relation of Rusin et al. (2003)... Only one lens galaxy was considered even if there are nearby galaxies that could appreciably affect the lens potentials, as in the case of SDSS J1055+4628 and SDSS J1304+2001...”

[276] [arXiv:0912.1462](https://arxiv.org/abs/0912.1462)

Title: Eight New Quasar Lenses from the Sloan Digital Sky Survey Quasar Lens Search

Authors: [Issha Kayo](#) et al

Another crucial constraint on lensing is duration. Following the discovery of high proper motions for quasars (Luyten 1969, and Hewitt & Burbidge 1993), suggesting that quasars are nearby, it was noted that the alignment of components could not remain such that a lensed object is displayed for more than a decade or two at most. This effectively rules out many Arp systems as lensing candidates.

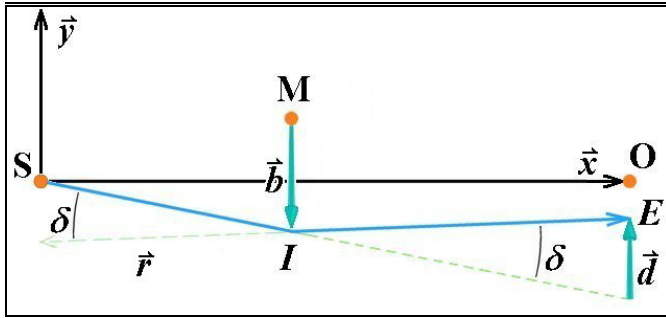


Figure 1: A diagram of the alignment of components in a gravitational lens by Louis Marmet (from his website, with kind permission).

[410] [arXiv:0912.2145](https://arxiv.org/abs/0912.2145)

Title: Short-duration lensing events: II. Expectations and Protocols

Authors: [Rosanne Di Stefano](#)

Plasmas

“The role of turbulence in various astrophysical settings is reviewed. Among the differences to laboratory and atmospheric turbulence we highlight the ubiquitous presence of magnetic fields that are generally produced and maintained by dynamo action. The extreme temperature and density contrasts and stratifications are emphasized in connection with turbulence in the interstellar medium and in stars with outer convection zones, respectively. In many cases turbulence plays an essential role in facilitating enhanced transport of mass, momentum, energy, and magnetic fields in terms of the corresponding course-grained mean fields. Those transport properties are usually strongly modified by anisotropies and often completely new effects emerge in such a description that have no correspondence in terms of the original (non course-grained) fields.”

[258] [arXiv:0912.1340](https://arxiv.org/abs/0912.1340)

Title: Astrophysical turbulence

Authors: [Axel Brandenburg](#), [Aake Nordlund](#)

[567] [arXiv:0912.2968](https://arxiv.org/abs/0912.2968)

Title: Plasma physics and planetary astrophysics

Authors: [Gilles Chabrier](#)

Expansion

We missed this paper by Antonio Alfonso-Faus. He raises argument for a static Universe: *“We present the results of two empirical constancies: the fine structure constant and the Rydberg constant. When the speed of light c is taken away from the fine structure constant, as shown elsewhere, this constancy implies the constancy of the ratio e^2/h , e the charge of the*

electron and h Planck constant. This forces the charge of the electron e to be constant as long as the action h (an angular momentum) is a true constant too. Then the constancy of the Rydberg expression implies that the momentum mc is also a true constant. This is just the second law of Newton. The Compton wavelength, h/mc , is then a true constant and there is no expansion at the quantum mechanical level. General relativity then predicts that the universe is not expanding. It is the only solution for cosmology. The time variation of the speed of light explains the observed red shift.”

[arXiv:0908.1539](https://arxiv.org/abs/0908.1539)

Title: The case for a non-expanding universe

Authors: [Antonio Alfonso-Faus](#)

Black Holes

Steve Crothers takes another look at the theoretical basis for Black Holes in this paper, and finds that a crucial term is invalid. Steve has shown extensive mathematical argument that Black Holes in terms of the so-called Schwarzschild metric are untenable, with far-reaching consequences for cosmological theory.

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

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

Author: Stephen Crothers

Dark Matter vs MOND

Joao Magueijo is taking an increasing interest in MOND. Here is their latest publication: *“In previous work it was shown that MOND theories predict anomalously strong tidal stresses near the saddle points of the Newtonian gravitational potential. An analytical examination of the saddle between two bodies revealed a linear and a non-linear solution, valid for the outer and inner regions. Here we present a numerical algorithm for solving the MOND equations.”*

[145] [arXiv:0912.0710](https://arxiv.org/abs/0912.0710) [[pdf](#), [other](#)]

Title: MONDian three-body predictions for LISA Pathfinder

Authors: [Neil Bevis](#), [Joao Magueijo](#), [Christian Trenkel](#), [Steve Kemble](#)

[512] [arXiv:0912.2678](https://arxiv.org/abs/0912.2678)

Title: New Physics at Low Accelerations (MOND): an Alternative to Dark Matter

Authors: [Mordehai Milgrom](#)

WMAP

“We investigate large-angle scale temperature anisotropy in the Cosmic Microwave Background (CMB) with the Wilkinson Microwave Anisotropy Probe (WMAP) data and model the large-angle anomalies as the effect of the CMB quadrupole anisotropies caused by the local density inhomogeneities.”

[364] [arXiv:0912.1913](#) [[pdf](#), [other](#)]

Title: Modelling the WMAP large-angle anomalies as an effect of a local density inhomogeneity

Authors: [Li-Ping He](#), [Quan Guo](#)

Method

“A valuable amount of information is available in peculiar velocities of galaxies. Peculiar velocity surveys have recently allowed the discovery of potential problems with LCDM. Nonetheless, their direct observation through distance measurements remains a daunting task. Another way of considering the problem is to use orbit reconstruction methods assuming some mass-to-light assignment for galaxies. We give here two applications of this procedure for the study of large-scale bulk flows and the dynamics of voids in the Local Universe... More particularly, we estimate the constraints that the peculiar velocities put on the cosmology. The information on dynamics that is included in reconstructed orbits of galaxies also allows us to have a much better prescription for defining and identifying voids in simulations and redshift catalogs. We present this new technique and how voids may give us additional constraints on cosmology with current and future surveys.”

[107] [arXiv:0912.0516](#) [[pdf](#), [other](#)]

Title: Dynamics of the Local Universe: cosmic velocity flows and voids

Authors: [G. Lavaux](#)