



Monthly Notes of the Alternative Cosmology Group – December 2012

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

Please address all correspondence to MNACG Editor, Hilton Ratcliffe: mnacg_editor@cosmology.info.

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 papers published on arXiv under astro-ph, together with those under gen-phys, for the months of January to December, 2012. 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 these monthly notes seek to publicise recently published empirical results that are aligned with that ethos. In other words, what observations seem anomalous in terms of the Standard Model of Cosmology? 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”.

I. Editorial comment

It has become clear to me that my personal circumstances are putting a severe and unacceptable constraint on my ability to edit and timeously issue the MNACG. Consequently, in consultation with Eric Lerner, we have decided that I should step down and hand over the reins to someone else. Many of you are eminently qualified to do this job, and if you feel that you have the time and motivation, please contact me by email. Thank you.

II. Members' books

1. Johan Masreliez: *The Progression of Time: How the expansion of space and time forms our world and powers the universe*. CreateSpace Independent Publishing Platform (September 17, 2012)

III. Supernovae and Standard Candles

Editor: The assumption of Type 1A SNe as standard candles has been dealt a further blow as astronomers discover an increasing diversity of types within the 1A signature, including variations in the light curve. If 1A SNe are indeed not standard candles, then they are useless as potential indicators of expansion and lately, accelerated expansion.

1. Title: Diversity of Type Ia Supernovae Imprinted in Chemical Abundances

Authors: [Takuji Tsujimoto](#), [Toshikazu Shigejima](#)

[arXiv:1210.7829](#)

Quote: “A time delay of Type Ia supernova (SN Ia) explosions hinders the imprint of their nucleosynthesis on stellar abundances. However, some occasional cases give birth to stars that avoid enrichment of their chemical

compositions by massive stars and thereby exhibit a SN Ia-like elemental feature including a very low [Mg/Fe] (~ -1). We highlight the elemental feature of Fe-group elements for two low-Mg/Fe objects detected in nearby galaxies, and propose the presence of a class of SNe Ia that yield the low abundance ratios of [Cr,Mn,Ni/Fe]. Our novel models of chemical evolution reveal that our proposed class of SNe Ia (slow SNe Ia) is associated with ones exploding on a long timescale after their stellar birth, and gives a significant impact on the chemical enrichment in the Large Magellanic Cloud (LMC). In the Galaxy, on the other hand, this effect is unseen due to the overwhelming enrichment by the major class of SNe Ia that explode promptly (prompt SNe Ia) and eject a large amount of Fe-group elements. This nicely explains the different [Cr,Mn,Ni/Fe] features between the two galaxies as well as the puzzling feature seen in the LMC stars exhibiting very low Ca but normal Mg abundances.”

2. Title: Supernovae Ia Light Curves Show a Static Universe

Authors: [Lyndon Ashmore](#)

[viXra:1207.0015](#)

Quote: “High redshift broadening of supernovae light curves, taken at face value, is the only direct evidence for expansion and is often used to discount Tired Light Theories. However, the authors of these papers look at high redshifts since these results are said to give “conclusive evidence for expansion.” But what of the smaller redshifts?, what do they show? This paper reviews supernovae aging data and shows that if we ignore Malmquist biases and that fact that brighter supernova Ia do have intrinsically broader light curves, then the main stream super-novae evidence is that whilst there may be expansion at high redshifts, there is no time dilation and therefore no expansion at low redshifts. That is, if we are to believe the main stream version of supernovae light curves then we must believe that the Universe is presently static..”

3. Title: Tired Light and Type Ia Supernovae Observations

Authors: [Herman Holushko](#)

[viXra:1203.0062](#)

Quote: “The comparative analysis shows advantages of “tired light” over “accelerated Universe expansion” model.”

4. Title: Type Iax Supernovae: A New Class of Stellar Explosion

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

[arXiv:1212.2209](#)

IV. Quasars

1. Title: A structure in the early universe at $z \sim 1.3$ that exceeds the homogeneity scale of the R-W concordance cosmology

Authors: [Roger G. Clowes](#)_et al

[arXiv:1211.6256](#)

Quote: “This new, huge LQG appears to be the largest structure currently known in the early universe. Its size suggests incompatibility with the Yadav et al. scale of homogeneity for the concordance cosmology, and thus challenges the assumption of the cosmological principle. ”

Editor: The energy levels and velocities of QSOs at their deemed redshift-distance are almost impossible to explain with baryonic physics.

2. Title: Kinetic power of quasars and statistical excess of MOJAVE superluminal motions

Authors: [M. Lopez-Corredoira](#), [M. Perucho](#)

[arXiv:1206.6282](#)

Quote: “The MOJAVE survey contains 101 quasars with a total of 354 observed radio components that are different from the radio cores, among which 95% move with apparent projected superluminal velocities with respect to the core, and 45% have projected velocities larger than $10c$ (with a maximum velocity $60c$).”

3. Title: On the non-evolution of the dependence of black hole masses on bolometric luminosities for QSOs

Authors: [M. Lopez-Corredoira](#), [C. M. Gutierrez](#)

[arXiv:1112.4421](#)

Quote: “There are extremely luminous quasi stellar objects (QSOs) at high redshift which are absent at low redshift. The lower luminosities at low redshifts can be understood as the external manifestation of either a lower Eddington ratio or a lower mass. To distinguish between both effects, we determine the possible dependence of masses and Eddington ratios of QSOs with a fixed luminosity as a function of redshifts; this avoids the Malmquist bias or any other selection effect ... It also leaves a question to be solved: **Why are there not QSOs with very high mass at low redshift?** A brief discussion of the possible reasons for this is tentatively pointed out.”

4. Title: Disclosing the Radio Loudness Distribution Dichotomy in Quasars: An Unbiased Monte Carlo Approach Applied to the SDSS-FIRST Quasar Sample

Authors: [Mislav Balokovic](#), [Vernesa Smolcic](#), [Zeljko Ivezić](#), [Gianni Zamorani](#), [Eva Schinnerer](#), [Brandon C. Kelly](#)

[arXiv:1209.1099](#)

Quote: “We investigate the dichotomy in the radio loudness distribution of quasars by modelling their radio emission and various selection effects using a Monte Carlo approach. **The existence of two physically distinct quasar populations, the radio-loud and radio-quiet quasars, is controversial** and over the last decade a bimodal distribution of radio loudness of quasars has been both affirmed and disputed ... In agreement with other recent work, we conclude that the SDSS-FIRST sample strongly suggests that the radio loudness distribution of quasars is not a universal function, and that more complex models than presented here are needed to fully explain available observations.”

V. Redshift

Editor: Chen *et al* appear to have uncovered a rhythm in opacity values in SNe data sets. Considering that redshift (energy loss) may be at least partially related to opacity of some kind, perhaps this can be mined more deeply to see if there is any correlation with Karlsson periodicities and fractal patterns.

1. Title: Is the Cosmic Transparency Spatially Homogeneous?

Authors: [Jun Chen](#), [Puxun Wu](#), [Hongwei Yu](#), [Zhengxiang Li](#)

[arXiv:1210.2805](#)

Quote: “We study the constraints on the cosmic opacity using the latest BAO and Union2 SNIa data in this paper and find that the best fit values seem to indicate that an opaque universe is preferred in redshift regions $\$0.20-0.35\$, \$0.35-0.44\$, and \$0.60-0.73\$, whereas, a transparent universe is favored in redshift regions $\$0.106-0.20\$, \$0.44-0.57\$, and \$0.57-0.60\$. However, our result is still consistent with a transparent universe at the 1σ confidence level, even though the best-fit cosmic opacity oscillates between zero and some nonzero values as the redshift varies.”$$

VI. Stellar Evolution and Large-Scale Structure

Editor: The following paper interrogates some principles of standard model structure formation. Chandra Wickramasinghe was co-author of *Lifecloud* with the late Fred Hoyle. Note that “dark matter” in the quote below refers to practically invisible ordinary baryonic matter.

1. Title: Why don't clumps of cirrus dust gravitationally collapse?

Authors: [Rudolph E. Schild](#), [Carl H. Gibson](#), [Theo M. Nieuwenhuizen](#), [N. Chandra Wickramasinghe](#)

[arXiv:1210.1103](#)

Quote: “We consider the Herschel-Planck infrared observations of presumed condensations of interstellar material at a measured temperature of approximately 14 K (Juvella *et al.*, 2012), the triple point temperature of hydrogen. The

standard picture is challenged that the material is cirrus-like clouds of ceramic dust responsible for Halo extinction of cosmological sources (Finkbeiner, Davis, and Schlegel 1999). Why would such dust clouds not collapse gravitationally to a point on a gravitational free-fall time scale of 10^8 years? Why do the particles not collide and stick together, as is fundamental to the theory of planet formation (Blum 2004; Blum and Wurm, 2008) in pre-solar accretion discs? Evidence from $3.3\ \mu\text{m}$ and UIB emissions as well as ERE (extended red emission) data point to the dominance of PAH-type macromolecules for cirrus dust, but such fractal dust will not spin in the manner of rigid grains (Draine & Lazarian, 1998). IRAS dust clouds examined by Herschel-Planck are easily understood as dark matter Proto-Globular-star-Cluster (PGC) clumps of primordial gas planets, as predicted by Gibson (1996) and observed by Schild (1996)."

2. Title: Do intergalactic magnetic fields imply an open universe?

Authors: [J. D. Barrow](#), [C. G. Tsagas](#), [K. Yamamoto](#)
[arXiv:1210.1183](#)

Quote: "The detection of magnetic fields at high redshifts, and in empty intergalactic space, support the idea that cosmic magnetism has a primordial origin. Assuming that Maxwellian electromagnetism and general relativity hold, and without introducing any 'new' physics, we show how the observed magnetic fields can easily survive cosmological evolution from the inflationary era in a marginally open Friedmann universe but fail to do so, by a very wide margin, in a flat or a marginally closed universe."

3. Title: The galaxy ancestor problem

Authors: [Mike Disney](#), [Huw Lang](#)
[arXiv:1109.2870](#)

Quote: "HST finds galaxies whose Tolman dimming should exceed 10 mag. Could evolution alone explain these as our ancestor galaxies? Or could they be representatives of quite a different dynasty whose descendants are no longer prominent today? We explore this latter hypothesis and argue that Surface Brightness Selection Effects naturally bring into focus quite different dynasties from different redshifts. "

4. Title: Supermassive Population III Supernovae and the Birth of the First Quasars

Authors: [Daniel J. Whalen et al](#)
[arXiv:1211.1815](#)

Quote: "The existence of supermassive black holes as early as $z \sim 7$ is one of the great unsolved problems in cosmological structure formation."

5. Title: Revisiting the Cosmological Principle in a Cellular Framework

Authors: [L. Zaninetti](#)
[arXiv:1212.6838](#)

Quote: "The Cosmological Principle in its various versions states that: (i) the Galaxy does not occupy a particular position, (ii) the Universe is homogeneous and isotropic. This statement does not agree with the recent astronomical observations in the range z lower than 0.05 which are in agreement with a cellular structure of the Universe. "

VII. Big Bang/Lambda-CDM

Editor: The development of methodology is done explicitly to support the orthodoxy. In some cases, it reduces to pure sophistry.

1. Title: A Consistent Approach to Falsifying Lambda-CDM with Rare Galaxy Clusters

Authors: [Ian Harrison](#), [Shaun Hotchkiss](#)
[arXiv:1210.4369](#)

Quote: "We consider methods with which to answer the question 'is any observed galaxy cluster too unusual for Lambda-CDM?' After emphasizing that many previous attempts to answer this question have fallen foul of a statistical bias which causes them to overestimate the confidence levels to which Lambda-CDM can be ruled out, we outline a consistent approach to these rare clusters which allows the question to be answered ... This quantity is independent of the observational survey in which the cluster was found, which makes it an ideal proxy for ranking

the relative unusualness of clusters detected by different surveys. We then calculate the probability that any cluster could have been observed with this equivalent mass at redshift zero, avoiding the a posteriori bias present in many earlier analyses. **These two steps are performed for a systematic and comprehensive sample of observed galaxy clusters and we confirm that none are more than 1-sigma deviations from the Lambda-CDM expectation.** Whereas we have only applied our method to galaxy clusters, it is applicable to any isolated, collapsed, halo. As motivation for future surveys, we also calculate where in the mass redshift plane the rarest halo is most likely to be found, giving information as to which objects might be the most fruitful in the search for new physics.”

2. Title: The dark matter crisis: falsification of the current standard model of cosmology

Authors: [Pavel Kroupa](#)

[arXiv:1204.2546v2](#)

Quote: “The current standard model of cosmology (SMoC) requires The Dual Dwarf Galaxy Theorem to be true according to which two types of dwarf galaxies must exist: primordial dark-matter (DM) dominated (type A) dwarf galaxies, and tidal-dwarf and ram-pressure-dwarf (type B) galaxies void of DM. Type A dwarfs surround the host approximately spherically, while type B dwarfs are typically correlated in phase-space. Type B dwarfs must exist in any cosmological theory in which galaxies interact. Only one type of dwarf galaxy is observed to exist on the baryonic Tully-Fisher plot and in the radius-mass plane. The Milky Way satellite system forms a vast phase-space-correlated structure that includes globular clusters and stellar and gaseous streams. Other galaxies also have phase-space correlated satellite systems. Therefore, The Dual Dwarf Galaxy Theorem is falsified by observation and dynamically relevant cold or warm DM cannot exist. It is shown that the SMoC is incompatible with a large set of other extragalactic observations. Other theoretical solutions to cosmological observations exist. In particular, alone the empirical mass-discrepancy--acceleration correlation constitutes convincing evidence that galactic-scale dynamics must be Milgromian. Major problems with inflationary big bang cosmologies remain unresolved.”

VIII. Method

Editor: The Smithsonian Astrophysical Observatory is administering what looks to be a valuable resource for students of space science. I haven't used it yet, but the blurb sounds good.

1. Title: ADS Labs - Supporting Information Discovery in Science Education

Authors: [Edwin A. Henneken](#), [Donna Thompson](#)

[arXiv:1210.0840](#)

Quote: “The SAO/NASA Astrophysics Data System (ADS) is an open access digital library portal for researchers in astronomy and physics, operated by the Smithsonian Astrophysical Observatory (SAO) under a NASA grant, successfully serving the professional science community for two decades ... The ADS has been recognized as a rich source of information for the science education community in astronomy, thanks to its collaborations within the astronomy community, publishers and projects like Com- PADRE. One element that makes the ADS uniquely relevant for the science education community is the availability of powerful tools to explore aspects of the astronomy literature as well as the relationship between topics, people, observations and scientific papers. The other element is the extensive repository of scanned literature, a significant fraction of which consists of historical literature.”

2. Title: Why does the Jeans Swindle work?

Authors: [M. Falco](#), [S. H. Hansen](#), [R. Wojtak](#), [G. A. Mamon](#)

[arXiv:1210.3363](#)

Quote: “When measuring the mass profile of any given cosmological structure through internal kinematics, the distant background density is always ignored. This trick is often referred to as the "Jeans Swindle". Without this trick a divergent term from the background density renders the mass profile undefined, however, this trick has no formal justification. **We show that when one includes the expansion of the Universe in the Jeans equation, a term appears which exactly cancels the divergent term from the background.** We thereby establish a formal justification for using the Jeans Swindle.”

Editor: The elegance of Martín Lopéz-Corredoira's arguments and appeals for reason is always refreshing.

3. Title: Comments on the "Monoceros" affair

Authors: [M. Lopez-Corredoira](#) et al.

[arXiv:1207.2749](#)

Quote: "This is a brief note to comment on some recent papers addressing the Monoceros ring. In our view, nothing new was delivered on the matter: No new evidence or arguments are presented which lead to think that the overdensities in Monoceros must not be due to the flared thick disc of the Milky Way. Again, we restate that extrapolations are easily misleading and that a model of the Galaxy is not the Galaxy. Raising and discussing exciting possibilities is healthy. However, enthusiasm should not overtake and produce strong claims before thoroughly checking simpler and more sensible possibilities within their uncertainties. In particular, claiming that a reported structure, such as the Monoceros Ring, is not Galactic (an exciting scenario) should not be done without rejecting the possibility of being due to the well established warped and flared disc of the Milky Way (simpler)."

4. Title: The Obscure Precession of Mercury's Perihelion

Authors: [R. Wayte](#)

[viXra:1201.0064](#)

Quote: "The Sun's orbital motion around the Solar System barycentre contributes a small quadrupole moment to the gravitational binding energy of Mercury. This moment has until now gone undiscovered, but it actually generates 7arcsec/cy precession of Mercury's perihelion. Consequently, the residual 43arcsec/cy allocated previously to general relativity must in reality account for this new component and only 36arcsec/cy for general relativity. This means that the orbit of Mercury is grossly incompatible with the vacuum solution of GR."

Editor: All three premises in this essay are factually wrong, but it nevertheless comprises a very clear illustration of how the tenets of BBT are derived.

5. Title: Who discovered Universe expansion?

Authors: [Ian Steer](#)

[arXiv:1212.1359](#)

Quote: "Lundmark established observational evidence that the Universe is expanding. Lemaitre established theoretical evidence. Hubble established observational proof."

IX. CMBR

Editor: Analysis of WMAP results is a continuous process of stripping out noise in such a way that the preferred signal is left. It may well be that after removing all the influences of astrophysical structure in their entirety, nothing will be left.

1. Title: Residual foreground contamination in the WMAP data and bias in non-Gaussianity estimation

Authors: [Pravabati Chingangbam](#), [Changbom Park](#)

[arXiv:1210.2250](#)

Quote: "We analyze whether there is any residual foreground contamination in the cleaned WMAP 7 years data for the differential assemblies, Q, V and W. We calculate the correlation between the foreground map, from which long wavelength correlations have been subtracted, and the foreground reduced map for each differential assembly after applying the Galaxy and point sources masks. We find positive correlations for all the differential assemblies, with high statistical significance. For Q and V, we find that a large fraction of the contamination comes from pixels where the foreground maps have positive values larger than three times the rms values. These findings imply the presence of residual contamination from Galactic emissions and unresolved point sources. We redo the analysis after masking the extended point sources catalogue of Scodeller et al. [7] and find a drop in the correlation and corresponding significance values. To quantify the effect of the residual contamination on the search for primordial non-Gaussianity in the CMB we add estimated contaminant fraction to simulated Gaussian CMB maps and calculate the characteristic

non-Gaussian deviation shapes of Minkowski Functionals that arise due to the contamination. We find remarkable agreement of these deviation shapes with those measured from WMAP data, which imply that a major fraction of the observed non-Gaussian deviation comes from residual foreground contamination. We also compute non-Gaussian deviations of Minkowski Functionals after applying the point sources mask of Scodeller et al. and find a decrease in the overall amplitudes of the deviations which is consistent with a decrease in the level of contamination.”

Editor: Big Bang Theory rests upon the Cosmological Principle that the large-scale Universe is homogeneous and isotropic. Analysis of the microwave background has been matched to this principle. However, depending upon choice of priors, it is also quite possible to find evidence of an *anisotropic* cosmos in the CMBR.

2. Title: Anisotropic universe with anisotropic sources

Authors: [Pavan Aluri](#), [Sukanta Panda](#), [Manabendra Sharma](#), [Snigdha Thakur](#)

[arXiv:1210.3159](#)

Quote: “We analyze the state space of a Bianchi I universe with anisotropic sources. Here we consider an extended state space which includes null geodesics in this background. The evolution equations for all the state observables are derived. Dynamical system approach is used to study the evolution of these equations. The asymptotic stable fixed points for all the evolution equations are found. We also check our analytic results with numerical analysis of these dynamical equations. The evolution of the state observables are studied both in cosmic time and using a dimensionless time variable. Finally the cosmic microwave background anisotropy maps are generated, assuming that the universe is anisotropic and dominated by one of the anisotropic sources since decoupling. We find that they contribute dominantly to CMB quadrupole.”

Editor: The search for possible cosmological causes for the surprising non-Gaussianity of the CMB goes on unabated.

3. Title: Non-Gaussianity in the Cosmic Microwave Background Induced by Dipolar Dark Matter

Authors: [Luc Blanchet](#), [David Langlois](#), [Alexandre Le Tiec](#), [Sylvain Marsat](#)

[arXiv:1210.4106](#)

4. Title: Peaks in the CMBR power spectrum. I. Mathematical analysis of the associated real space features

Authors: [M. Lopez-Corredoira](#), [A. Gabrielli](#)

[arXiv:1209.4607](#)

5. Title: Asymmetries in the angular distribution of the CMB

Authors: [Larissa Santos](#), [Thyrso Villela](#), [Carlos Alexandre Wuensche](#)

[arXiv:1207.0483](#)

Quote: “This analysis was also repeated for random regions in the SEQ quadrant with a 15-degree mask and the SEQ quadrant still remained asymmetric with respect to the other quadrants of the CMB map. We found an excess of power in the TPCF at scales >100 degrees in the SEQ with respect to the other quadrants that is independent of the Galactic cut used, and found no evidence for its possible relation with the cold spot signal. We could not find any specific region within the SEQ that might be considered responsible for the quadrant asymmetry.”

6. Title: Structures in the microwave background radiation

Authors: [K.A. Meissner](#), [P. Nurowski](#), [B. Ruzszycki](#)

[arXiv:1207.2498](#)

Quote: “We compare the actual WMAP maps with artificial, purely statistical maps of the same harmonic content to argue that there are, with confidence level 99.7 %, ring-type structures in the observed cosmic microwave background.”

X. Dark Matter/Energy/Holes

Editor: The search for Dark Matter observationally produces consistently unconvincing results. In this study, there is significantly more evidence for an absence of Dark Matter where it should have been detectable in large quantities, according to the Standard Model.

1. Title: Do globular clusters possess Dark Matter halos? A case study in NGC 2419

Authors: [Rodrigo Ibata](#), [Carlo Nipoti](#), [Antonio Sollima](#), [Michele Bellazzini](#), [Scott Chapman](#), [Emanuele Dalessandro](#)
[arXiv:1210.7787](#)

Quote: “We use recently published measurements of the kinematics, surface brightness and stellar mass-to-light ratio of the globular cluster NGC 2419 to examine the possibility that this Galactic halo satellite is embedded in a low-mass dark matter halo. NGC 2419 is a promising target for such a study, since its extreme Galactocentric distance and large mass would have greatly facilitated the retention of dark matter. A Markov-Chain Monte Carlo approach is used to investigate composite dynamical models containing a stellar and a dark matter component. We find that it is unlikely that a significant amount of dark matter (less than approx. 6% of the luminous mass inside the tidal limit of the cluster) can be present if the stars follow an anisotropic Michie model and the dark matter a double power law model. However, we find that more general models, derived using a new technique we have developed to compute non-parametric solutions to the spherical Jeans equation, suggest the presence of a significant dark matter fraction (approximately twice the stellar mass). Thus the presence of a dark matter halo around NGC 2419 cannot be fully ruled out at present, yet any dark matter within the 10 arcmin visible extent of the cluster must be highly concentrated and cannot exceed 1.1×10^6 Solar masses (99% confidence), in stark contrast to expectations for a plausible progenitor halo of this structure.”

2. Title: On the Existence of Black Holes

Authors: [Jeremy Dunning-Davies](#)
[viXra:1206.0087](#)

Quote: “Black holes are favourite objects for so many different groups of people to discuss. Many physicists discuss them quite seriously, while their possible existence must bring great joy to writers of science fiction. However, what is the theoretical background for their existence and what precisely is meant by the term ‘black hole’?”

3. Title: The Smallest Black Hole

Authors: [Bassera Hamid](#)
[viXra:1205.0061](#)

Quote: “There must be a paradox if we consider black hole as singularity in space-time! Indeed, if all black hole mass is concentrated in one point (the alleged singularity) and its horizon consists in a sphere of radius R , then by definition of the black hole there must be no energy at all between the singularity and its horizon - for any energy inside the horizon must be absorbed by the so-called singularity.”

Editor: The flaw in model-dependent astrophysics is that it ignores ambiguity. There may be multiple fits and varying explanations that are equally plausible.

4. Title: The Dark Knight Falter

Authors: [N. Mirabal](#)
[arXiv:1208.1693](#)

Quote: “Potential line emission at 111 and 129 GeV from 16 unassociated Fermi-LAT point sources has been reported recently by Su & Finkbeiner (2012c). Together with similar features seen by Fermi in a region near the Galactic Centre, the evidence has been interpreted as the spectral signature of dark matter annihilation or internal bremsstrahlung. Through a combination of supervised machine-learning algorithms and archival multiwavelength observations we find that 14 out of the 16 unassociated sources showing the line emission in the Su & Finkbeiner sample are most likely active galactic nuclei (AGN). Based on this new evidence, one must widen the range of possible solutions for the 100-140 GeV excess to include a very distinct astrophysical explanation. While we cannot rule out a dark matter origin for the line emission in the Galactic Centre, we posit that if the detection in the Su & Finkbeiner sample is indeed real it might be related to accretion, bubble, or jet activity in nearby ($z < 0.2$) AGN. Alternatively, given the right conditions, the similarity could be due to a chance occurrence caused by extragalactic background light (EBL) absorption. Or else one must concede that the features are an artefact of instrumental or calibration issues.”

5. Title: The failures of the standard model of cosmology require a new paradigm

Authors: [Pavel Kroupa](#), [Marcel Pawłowski](#), [Mordehai Milgrom](#)

arXiv: [1301.3907](#)

Quote: *“Cosmological models that invoke warm or cold dark matter can not explain observed regularities in the properties of dwarf galaxies, their highly anisotropic spatial distributions, nor the correlation between observed mass discrepancies and acceleration. These problems with the standard model of cosmology have deep implications, in particular in combination with the observation that the data are excellently described by Modified Newtonian Dynamics (MOND). MOND is a classical dynamics theory which explains the mass discrepancies in galactic systems, and in the universe at large, without invoking dark entities. MOND introduces a new universal constant of nature with the dimensions of acceleration, a_0 , such that the pre-MONDian dynamics is valid for accelerations $a \gg a_0$, and the deep MONDian regime is obtained for $a \ll a_0$, where space-time scale invariance is invoked. Remaining challenges for MOND are (i) explaining fully the observed mass discrepancies in galaxy clusters, and (ii) the development of a relativistic theory of MOND that will satisfactorily account for cosmology.”*