Newsletter of *A Cosmology Group* - December 2022

ACG Editorial

*M*ore surprising results (for mainstream cosmologists) from last summer. Caution: the redshifts are photometric...

*T*his Newsletter is packed full of papers, most of them saying that ΛCDM is failing all the tests.
The first paper listed below supports Tired-Light with JWST observations.

Thanks to all who contributed references to papers. Best wishes for the new year!

Louis Marmet, December 14, 2022
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Reviewed Publications[1]

- Redshift, Hubble parameter, Expansion

"**Cosmological Model Tests with JWST**" N. Lovyagin *et al.* doi.org/10.3390/galaxies10060108 Open Access (2022-12-11) "Here we provide results on performing the "angular diameter – redshift" cosmological test for the first JWST observation data. We compare this result with predictions of the standard ΛCDM cosmological model and some static cosmological models, including Zwicky's "tired-light" model. The latter is currently assumed to be ruled out by observations. We challenge this assumption and show that a static model can provide a natural and straightforward way of solving the puzzle of the well-evolved galaxies and better agreements with the results of the JWST "angular diameter – redshift" test at higher redshifts than the correcting evolution model within the ΛCDM framework. We discuss several cosmological tests that will be important for further research on the possibility of revising the expanding Universe paradigm."
"... the first JWST observations of high-redshift objects cannot be explained by the expanding-Universe model."

"**Data from 14,577 cosmological objects and 14 FRBs confirm the predictions of new tired light (NTL) and lead to a new model of the IGM**" L.E. Ashmore, J. Phys.: Conf. Ser. **2197** 012003 (2022) iopscience.iop.org/article/10.1088/1742-6596/2197/1/012003 Lyndon Ashmore adds dust to his new (old) model.

"**Considering light–matter interactions in the Friedmann equations**" V. Vavryčuk, Proceedings of the Royal Society A (2022-5-4) royalsocietypublishing.org/doi/10.1098/rspa.2022.0045 "... in contrast to Λ, which is of unclear physical nature, the light–matter interaction term is physically well justified"

"**A Comprehensive Measurement of the Local Value of the Hubble Constant with 1 km/s/Mpc Uncertainty from the Hubble Space Telescope and the SH0ES Team**" A.G. Riess *et al.* arxiv.org/abs/2112.04510 (2021-12-8) "We find a 5-σ difference with H_0 predicted by Planck+LCDM, with no indication this arises from measurement errors or analysis variations considered to date. The source of this now long-standing discrepancy between direct and cosmological routes to determining the Hubble constant remains unknown."
"**Hubble tensions: a historical statistical analysis**" M. López-Corredoira arxiv.org/abs/2210.07078 "It is likely that the underestimation of error bars for H_0 in many measurements contributes to the apparent 4.4σ discrepancy."

[1]For all reviews, quoted text is adapted from the original, underlined text is my emphasis, and *italicized text are my comments.*

"**Cosmological Redshift and Cosmic Time Dilation in the FLRW Metric**" V. Vavryčuk, Frontiers in Physics (2022-5-23) www.frontiersin.org/articles/10.3389/fphy.2022.826188/full

"**Intrinsic tension in the supernova sector of the local Hubble constant measurement and its implications**" R. Wojtak *et al.* arxiv.org/abs/2206.08160 (2022-6-16)

"**The MOSDEF Survey: The Evolution of the Mass–Metallicity Relation from z=0 to z $\sim$ 3.3**" R.L. Sanders *et al.*, ApJ **914** 19 (2021-6-9) iopscience.iop.org/article/10.3847/1538-4357/abf4c1 "We find no evidence that the fundamental metallicity relation between M*, O/H, and star formation rate evolves out to z$\sim$3.3."

"**Galaxy clusters enveloped by vast volumes of relativistic electrons**" V. Cuciti *et al.*, Nature **609** 911 (2022-9-28) doi.org/10.1038/s41586-022-05149-3 *A useful observation for theories of redshift caused by electrons.*

- Nucleosynthesis

"**New calculations of solar spectrum resolve decade-long controversy about the sun's chemical composition**" Max Planck Society, phys.org (2022-5-23) phys.org/news/2022-05-solar-spectrum-decade-long-controversy-sun.html "... according to our analysis the sun contains 26% more elements heavier than helium than previous studies had deduced" "... implications for reconstructions of the chemical evolution of our cosmos..."

"**The Stellar Mass versus Stellar Metallicity Relation of Star-forming Galaxies at 1.6 $\leq$ z $\leq$ 3.0 and Implications for the Evolution of the α-enhancement**" D. Kashino *et al.*, ApJ **925** 82 (2022-1-26) iopscience.iop.org/article/10.3847/1538-4357/ac399e

- Galaxy and Large-Scale Structure Formation

"**'Bizarre' Group of Distant Black Holes are Mysteriously Aligned**" I. O'Neill, space.com (2016-4-12) www.space.com/32549-bizarre-group-of-distant-black-holes-are-mysteriously-aligned.html

"**The Rapid Buildup of Massive Early-type Galaxies: Supersolar Metallicity, High Velocity Dispersion, and Young Age for an Early-type Galaxy at z = 3.35**" P. Saracco *et al.*, ApJ **905** 40 (2020-12-10) iopscience.iop.org/article/10.3847/1538-4357/abc7c4

"**Possible Systematic Rotation in the Mature Stellar Population of a z = 9.1 Galaxy**" T. Tokuoka *et al.* ApJL **933** L19 (2022-7-1) iopscience.iop.org/article/10.3847/2041-8213/ac7447 "In conclusion, MACS1149-JD1 at z = 9.1 is the most distant galaxy with a signature of rotation. This is not contradictory to the concordance cosmological structure formation. Some theoretical studies predicted such a rotational disk in the earliest universe." *One can find some theoretical studies that predict anything!*

"**Scientists discover how first quasars in universe formed**" University of Portsmouth, phys.org (2022-7-6) phys.org/news/2022-07-scientists-quasars-universe.html *Scientists discover how first quasars formed, but then how can they explain why quasars are associated with nearby galaxies?* ui.adsabs.harvard.edu/abs/2018Ap%26SS.363..134F/abstract

"**Panic! At the Disks: First Rest-frame Optical Observations of Galaxy Structure at z>3 with JWST in the SMACS 0723 Field**" L. Ferreira *et al.* arxiv.org/abs/2207.09428 (2022-7-19) "We discover the surprising result that at $z > 1.5$ disk galaxies dominate the overall fraction of morphologies."

"**Two Remarkably Luminous Galaxy Candidates at z$\approx$10-12 Revealed by JWST**" R.P. Naidu arxiv.org/abs/2207.09434 (2022-7-19) "... defying number density forecasts for luminous galaxies based on Schechter UV luminosity functions"

"**First Batch of Candidate Galaxies at Redshifts 11 to 20 Revealed by the James Webb Space Telescope Early Release Observations**" H. Yan *et al.* arxiv.org/abs/2207.11558 (2022-7-23) "We have a total of 88 such candidates spreading over the two fields, some of which could be at redshifts as high as 20." *Galaxy F200DB-045 is tentatively placed at photometric redshifts z = 20.4 or 16.6 – either one would wonderful, but this article academic.oup.com/mnras/article/518/3/4755/6835532 puts it at z = 0.7!*

"**A very early onset of massive galaxy formation**" I. Labbe *et al.* arxiv.org/abs/2207.12446 (2022-7-25) "The presence of these galaxies at $z \sim 10$ suggests that galaxies with masses $M_* \sim 5 \times 10^9$ $M_\odot$ may be found out to redshifts as high as $z \sim 18$." "We infer from these first JWST data that the high mass end of the mass function evolves surprisingly little from $z \sim 10$ to $z \sim 6$."

"**The JWST Hubble Sequence: The Rest-Frame Optical Evolution of Galaxy Structure at** $1.5 < z < 8$" L. Ferreira *et al.* arxiv.org/abs/2210.01110 (2022-10-3) *Well, it turns out that there is not much evolution and* "the Hubble Sequence was already in place as early as one billion years after the Big Bang."

"**The distribution and morphologies of Fornax Cluster dwarf galaxies suggest they lack dark matter**" E. Asencio *et al.* MNRAS **515** 2, p. 2981 (2022-9) doi.org/10.1093/mnras/stac1765
They lack dark matter because it does not exist.

"**Potential Dark Matter Signal Gives Way to New Limits**" M. Rini, Physics **15** 159 (2022-10-13) physics.aps.org/articles/v15/159 "one of the best 'null result' in history" *Like the null result of a failed exam?*

"**A 0.6 Mpc H I structure associated with Stephan's Quintet**" C.K. Xu *et al.* Nature **610** 461 (2022-10-20) doi.org/10.1038/s41586-022-05206-x "... it is not clear how the low-density H I gas can survive the ionization by the intergalactic ultraviolet background on such a long time scale"

- Cosmology

"**Alternative ideas in cosmology**" M. López-Corredoira and L. Marmet, Int. J. Mod. Phys. D **31** 2230014 (2022-3-18) doi.org/10.1142/S0218271822300142 *Review paper, a must read for ACG members.*

"**FLRW – Who ordered that?**" J. Wagner, *Cosmo of '69* Blog (2022-1-20) cosmoprinciple.wordpress.com/2022/01/20/flrw-who-ordered-that/ "... we give up on the attempt to reconstruct our universe as a whole", *a very wise approach in my opinion.*

"**Worry No More, The Hubble Tension is Relieved: A Truly Direct Measurement of the Hubble Constant from Mooniversal Expansion**" G.S. Anand *et al.* arxiv.org/abs/2203.16551 (2022-3-30) This is a joke, but it was published two days too early.

"**Heart of Darkness**" S. Sarkar, Inference (2022-3) inference-review.com/article/heart-of-darkness "In this essay, I argue that the standard model of cosmology is wrong. [...] Like the geocentric model, the underlying assumptions of the standard model have no physical basis."

"**Gérard de Vaucouleurs**" Interviewed by Alan Lightman, American Institute of Physics (1988-11-7) www.aip.org/history-programs/niels-bohr-library/oral-histories/33930 *An interesting discussion with de Vaucouleurs.*

"**Cosmology Intertwined: A Review of the Particle Physics, Astrophysics, and Cosmology Associated with the Cosmological Tensions and Anomalies**" E. Abdalla *et al.* arxiv.org/abs/2203.06142 (2022-3-11) "ΛCDM cannot explain the key concepts in the understanding of our Universe"

"**Optical gravity in a graviton spacetime**" M.R. Edwards arxiv.org/abs/2205.02776 (2022-4-22) "We model the optical medium analogue of spacetime as a real graviton conjugate interlinking all masses."

"**Fast galaxy bars continue to challenge standard cosmology**" M. Roshan *et al.* arxiv.org/abs/2106.10304 (2021-6-18)

"**From Galactic Bars to the Hubble Tension: Weighing Up the Astrophysical Evidence for Milgromian Gravity**" I. Banik *et al.*, Symmetry **14**(7), 1331 (2022-6-27) www.mdpi.com/2073-8994/14/7/1331

"**Stress Testing ΛCDM with High-redshift Galaxy Candidates**" M. Boylan-Kolchin arxiv.org/abs/2208.01611 (2022-8-2) "The reported masses of the most massive galaxy candidates at $z \sim 10$ in JWST observations are in tension with [number density and stellar mass density of galaxies] limits, indicating an issue with well-developed techniques for photometric selection of galaxies, galaxy stellar mass or effective survey volume estimates, or the ΛCDM model."

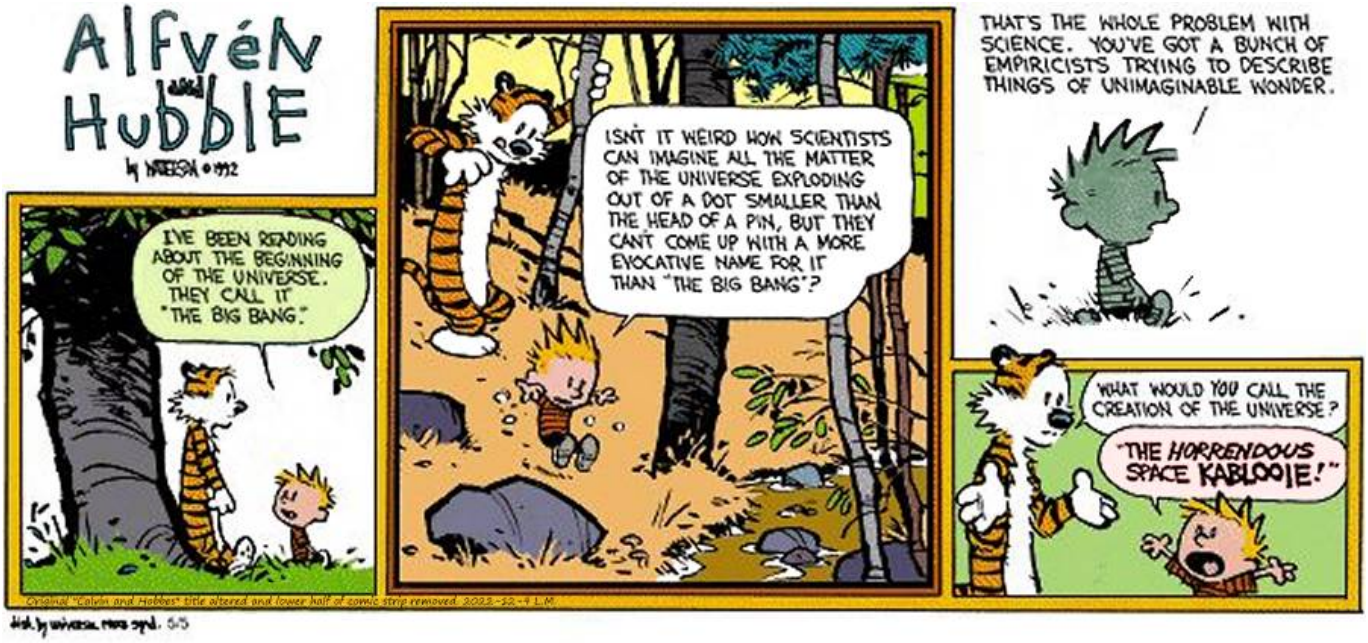
"**On the stunning abundance of super-early, massive galaxies revealed by JWST**" A. Ferrara *et al.* arxiv.org/abs/2208.00720 (2022-8-1) "... a conspiracy between a decreasing dust attenuation, making galaxies brighter, that almost exactly compensates for the increasing shortage of their host halos." *A conspiracy between dust and galactic halo? In addition to the conspiracy between galactic luminosity and size evolution to satisfy the Tolman Surface Brightness Test for the Reality of expansion?*

Is the Horrendous Space Kablooie model a 'conspiracy theory'?

"**A Challenge to the Standard Cosmological Model**" N. Secrest *et al.*arxiv.org/abs/2206.05624 (2022-6-11) *Universe isotropy rejected at* 5.1σ.

"**Massive Structures That Link Galaxies Together Have Started Spinning Leaving Experts Baffled**" A. Marie, Fancy Work (2022-10-6) fancy4work.com/massive-structures-that-link-galaxies-together-have-started-spinning-leaving-experts-baffled-marie/ *The first image of the article will please some plasma cosmologists!*

Thanks to Bill Watterson for this great idea from 1992. I significantly altered the original comic strip. Enjoy!



A Cosmology Group

A Cosmology Group draws its mandate from the *Open Letter to the Scientific Community* to engage scientists in an open exchange of ideas beyond the framework of Standard Cosmology through a critical examination[2] of the methods and investigations of cosmology. The *ACG Newsletter* highlights observational results that are anomalous in terms of the *Horrendous Space Kablooie* paradigm.

The *Newsletter* is published irregularly, editor's schedule permitting, and when interesting papers are available. ACG subscribers[3] receive notifications of *Newsletter* publications and a few additional announcements. You can subscribe to *ACG* by sending a request to `redshift@cosmology.info`.

If you would like to suggest a paper for review, please send a direct reference to `redshift@cosmology.info`. Published work in a refereed journal and with open access (e.g. a preprint on `arXiv` or `HAL`) is preferred.

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[2] When the thesis is supported by empirical evidence.
[3] ACG currently has 64 members.