



The Milky Way Panorama Credit: ESO / S. Brunier

## Newsletter of *A Cosmology Group* - November 2022

### ACG Editorial

Last summer the *Webb-Telescope* started operating and gave us a view of galaxies never seen before. While every mainstream cosmologist was surprised to see so many galaxies at large photometric redshifts, a large number ofasty publications confused the real issues.

Only now are some galaxies confirmed at redshifts  $z \lesssim 13$  with a higher confidence. News of astronomers losing sleep over the new observations have given a misinterpretation of Allison Kirkpatrick's worries. Galaxy formation theory, Kirkpatrick's expertise, is challenged by JWST data, but new observations can be accomodated by readjusting a few *parameters* - astronomers have many of those to play with. Observations by the JWST have not dethroned the Big Bang model yet.

In this Newsletter: A book review and as many papers as I could fit to catch up since the last *Newsletter*. Also, don't miss the new posts on [ACG Talks](#), [Media](#), [Essays](#), [Tired Light Models](#) and [Cosmology Models](#).

Louis Marmet, November 30, 2022  
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### Book Review<sup>1</sup>

“**Fundamental Ideas in Cosmology**: Scientific, philosophical and sociological critical perspectives”

Martín López-Corredoira, IoP-Science (2022)

Ebook: [iopscience.iop.org/book/978-0-7503-3775-5](https://iopscience.iop.org/book/978-0-7503-3775-5) (Free to read up to and including Chapter 1)

Hardcover: [www.amazon.co.uk/Fundamental-Ideas-Cosmology-philosophical-sociological/dp/0750337737](https://www.amazon.co.uk/Fundamental-Ideas-Cosmology-philosophical-sociological/dp/0750337737)

Video-abstract: [youtu.be/BeWZVJRZrHU](https://youtu.be/BeWZVJRZrHU) (4 mins.)

Martín López-Corredoira presents a skeptical view of the standard model of cosmology. The Big Bang Model is examined from different points of view: historical, scientific, philosophical and sociological. This is a most refreshing approach to cosmology compared to most of what is published today - instead of promoting the Big Bang model's  $\Lambda$ CDM variant, Martín shows the large number of attempts at understanding astronomical observations that differ from the standard model. With almost one thousand references on the problems of the standard cosmological model and alternative ideas, and references to hundreds of articles from mainstream and non-mainstream cosmology and astronomy, this book is a necessary reference for anybody seriously involved in cosmology.

The first Chapter presents a historical introduction to the standard cosmological model from before the twentieth century through the major developments of the last century. It is interesting to see this endeavour presented as the construction of a fantastic model. Certainly, the standard model is built to fit observations, but each step of its construction requires a leap of faith beyond normal science. As a result some scientists have developed a skeptical position on cosmology, which is the approach taken by Martín throughout the book.

The following Chapter present a few examples of the better known alternative cosmologies with a discussion of the caveats and problems that these alternative approaches have. This is followed by a discussion of the problems

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<sup>1</sup>For all reviews, quoted text is adapted from the original, underlined text is my emphasis, and *italicized text are my comments*.

that are found in the standard cosmological model itself. Only judging by the number of pages in the book, the problems in the standard model are almost as voluminous as the problems in alternative cosmologies!

I was surprised (and pleased) to find the next four Chapters of the book discuss the same topics as those listed in this *Newsletter*, and *in the same order*: Redshift, Microwave Background, Nucleosynthesis and Large-Scale Structure. Of course, the interpretation of redshift is crucial to the entire standard model, so it is no surprise that it is discussed first. The book covers a number of representative redshift theories, observational tests for the expansion, alternative origins of the CMBR, anomalies in the CMBR anisotropies, abundances of light elements, element abundance without primordial nucleosynthesis, formation of galaxies at high redshift, and departures from homogeneity and isotropy.

About nucleosynthesis, Martín writes: “... *one of the oldest pillars of the Big Bang may now be considered as one of its weakest supports. Light element abundances were a motivation to generate the standard cosmological model, but now they cannot be used to sustain the theory.*” (§6.8)

On galaxy formation: “*The discovery of galaxies with spectroscopic redshift  $z \approx 11$ , if corroborated, is more of a problem than good news for the progress of our knowledge of the Universe.*” (§7.2) Considering this was written before the observations with the JWST, the galaxy at  $z = 12.4$  is even more a problem for standard cosmology!

The book ends on the influence of sociological factors in the development of alternative cosmological models, with a philosophical analysis of the methodology of cosmology, social dynamics, culture, politics and religion, practical considerations such as available telescope time, publications. As we often tend to ignore the ‘socially relevant’ part of doing science, this discussion is as important as all the science in the rest of the book. Martín warns the reader about the religious, philosophical, economic, and political ideologies that disrupt the development of cosmology.

“No specific dogma has been defended in this book.” (§10.2.1) I hope this will convince you to offer it as a gift, both to you and your favourite mainstream cosmologist!

A presentation of the book and a debate with orthodox cosmologists is available on [YouTube](#).

## Reviewed Publications

### - Redshift, Hubble parameter, Expansion

“**A Measurement of the Cosmic Expansion Within our Lifetime**” F. Melia (2022-12) [arxiv.org/abs/2112.12599](https://arxiv.org/abs/2112.12599) “A ‘no’ answer, on the other hand, could be more revolutionary” *but the measurement is likely too difficult to achieve.*

“**Is the Universe expanding? Fritz Zwicky and the early tired-light hypothesis**” H. Kragh, *Journal of Astronomical History and Heritage* (ISSN 1440-2807) **20** No. 1, p. 2 (2017-4) [ui.adsabs.harvard.edu/abs/2017JAHH...20....2K/abstract](https://ui.adsabs.harvard.edu/abs/2017JAHH...20....2K/abstract)

### - Microwave [and other] Background

“**Anomalous Flux in the Cosmic Optical Background Detected With New Horizons Observations**” T. Lauer *et al.* (2022-2) [arxiv.org/abs/2202.04273](https://arxiv.org/abs/2202.04273) “Subtraction of the estimated IGL flux from the total COB level leaves a flux component of unknown origin”

“**On the detection of a cosmic dawn signal in the radio background**” S. Singh *et al.* *Nature Astronomy* **6** 607 (2022-5) [www.nature.com/articles/s41550-022-01610-5.pdf](https://www.nature.com/articles/s41550-022-01610-5.pdf) “We report a radiometer measurement of the spectrum of the radio sky in the 55–85 MHz band, which shows that the profile found by Bowman *et al.* in data taken with the Experiment to Detect the Global Epoch of Reionization Signature (EDGES) low-band instrument is not of astrophysical origin; their best-fitting profile is rejected with 95.3% confidence.” See also: “Did astronomers see hints of first stars? Experiment casts doubt on bold claim” D. Castelvecchi, *Nature*

(2022-2) [www.nature.com/articles/d41586-022-00577-7](http://www.nature.com/articles/d41586-022-00577-7) Beware of a hasty interpretation of “EDGES detection of a cosmic-dawn signature”, the SARAS 3 antenna provided results suggesting that the EDGES signal was caused by instrument error.

## - Nucleosynthesis

“New Thermonuclear Rate of  ${}^7\text{Li}(d,n){}^4\text{He}$  Relevant to the Cosmological Lithium Problem” S.Q. Hou *et al.* ApJ **920** 145 (2021-10) [iopscience.iop.org/article/10.3847/1538-4357/ac1a11](https://iopscience.iop.org/article/10.3847/1538-4357/ac1a11)

## - Galaxy and Large-Scale Structure Formation

“Molecular Line Observations in Two Dusty Star-forming Galaxies at  $z = 6.9$ ” S. Jarugula *et al.*, ApJ **921** 97 (2021-11) [iopscience.iop.org/article/10.3847/1538-4357/ac21db](https://iopscience.iop.org/article/10.3847/1538-4357/ac21db) “We find no evidence of evolution of depletion time with redshift in SMGs at  $z > 3$ .”

“The Star Formation History of a Post-starburst Galaxy Determined from Its Cluster Population” R. Chandar *et al.*, ApJ **920** 105 (2021-10) [iopscience.iop.org/article/10.3847/1538-4357/ac0c19](https://iopscience.iop.org/article/10.3847/1538-4357/ac0c19) “The estimated stellar mass of S12 is somewhat uncertain because this system has an unusual star formation history.”

“Cold gas in the Milky Way’s nuclear wind” E.M. Di Teodoro *et al.* Nature **584** 364 (2020-8) [www.nature.com/articles/s41586-020-2595-z](http://www.nature.com/articles/s41586-020-2595-z) “The presence of this cold, dense and high-velocity gas is puzzling...”

“MeerKAT discovers mystery clouds” G.I.G. Józsa, SARA0 Media Release (2021-12) [www.sarao.ac.za/media-releases/meerkat-discovers-mystery-clouds/](http://www.sarao.ac.za/media-releases/meerkat-discovers-mystery-clouds/) “The detection of a massive chain of dark HI clouds in the GAMA G23 Field” G.I.G. Jozsa *et al.* [arxiv.org/abs/2112.02033](https://arxiv.org/abs/2112.02033) “The system nature and origins is enigmatic...”

“Exploring the high-redshift PBH- $\Lambda$ CDM Universe: early black hole seeding, the first stars and cosmic radiation backgrounds” N. Cappelluti *et al.* (2021-9) [arxiv.org/abs/2109.08701](https://arxiv.org/abs/2109.08701)

“Extremely massive disc galaxies in the nearby Universe form through gas-rich minor mergers” R.A. Jackson *et al.* (2022-1) [arxiv.org/abs/2201.08855](https://arxiv.org/abs/2201.08855) “it is surprising that any discs exist at all at the highest stellar masses”

“The High Fraction of Thin Disk Galaxies Continues to Challenge  $\Lambda$ CDM Cosmology” M. Haslbauer *et al.* (2022-2) [iopscience.iop.org/article/10.3847/1538-4357/ac46ac](https://iopscience.iop.org/article/10.3847/1538-4357/ac46ac) “the sky-projected aspect ratio distribution produced by...  $\Lambda$ CDM simulations disagrees with the GAMA survey and Sloan Digital Sky Survey at  $\geq 12.5\sigma$ ” “The observed high fraction of thin disk galaxies is incompatible with  $\Lambda$ CDM cosmology: The angular momentum problem in galaxy formation is more severe than ever” M. Haslbauer, Dark Matter Crisis Blog (2022-2) [darkmattercrisis.wordpress.com/2022/02/25/66-the-observed-high-fraction-of-thin-disk-galaxies-is-incompatible-with-%ce%bbcdm-cosmology-the-angular-momentum-problem-in-galaxy-formation-is-more-severe-than-ever/](https://darkmattercrisis.wordpress.com/2022/02/25/66-the-observed-high-fraction-of-thin-disk-galaxies-is-incompatible-with-%ce%bbcdm-cosmology-the-angular-momentum-problem-in-galaxy-formation-is-more-severe-than-ever/)

“Spectroscopic Confirmation of a Protocluster at  $z = 3.37$  with a High Fraction of Quiescent Galaxies” I. McConachie *et al.* ApJ **926** 37 (2022-2) [iopscience.iop.org/article/10.3847/1538-4357/ac2b9f](https://iopscience.iop.org/article/10.3847/1538-4357/ac2b9f) “Surprisingly high fraction of dead galaxies found in ancient galactic ‘city’” I. Pittalwala, phys.org [phys.org/news/2022-02-surprisingly-high-fraction-dead-galaxies.html](https://phys.org/news/2022-02-surprisingly-high-fraction-dead-galaxies.html)

“What JWST will see” S. McGaugh (2022-1) [tritonstation.com/2022/01/03/what-jwst-will-see/](https://tritonstation.com/2022/01/03/what-jwst-will-see/) “Big galaxies at high redshift!”

“An early transition to magnetic supercriticality in star formation” T.C. Ching *et al.* Nature **601** 49 (2022-1) [www.nature.com/articles/s41586-021-04159-x](http://www.nature.com/articles/s41586-021-04159-x) “Stars may form 10 times faster than thought” L. Xin (2022-1) [www.science.org/content/article/stars-may-form-10-times-faster-thought](https://www.science.org/content/article/stars-may-form-10-times-faster-thought)

## - Cosmology

“Challenges for  $\Lambda$ CDM: An update” L. Perivolaropoulos *et al.* (2021) [arxiv.org/abs/2105.05208](https://arxiv.org/abs/2105.05208)

“An arc of galaxies 3 billion light-years long may challenge cosmology” L. Grossman, Science News (2021-6) [www.sciencenews.org/article/galaxy-giant-arc-3-billion-light-years-long-cosmology-space](https://www.sciencenews.org/article/galaxy-giant-arc-3-billion-light-years-long-cosmology-space) “The discovery is a “big deal” if true, but still needs to be confirmed”

“Antimatter Responds to Gravity in Same Way as Regular Matter, New Experiments Suggest” Sci.News (2022-1) [www.sci.news/physics/antiproton-proton-charge-mass-ratio-10437.html](https://www.sci.news/physics/antiproton-proton-charge-mass-ratio-10437.html) “... a difference could also shed light on why the Universe is made up almost entirely of matter, even though equal amounts of antimatter should have been created in the Big Bang. The differences between matter and antimatter particles that are consistent with the Standard Model are smaller by orders of magnitude to be able to explain this observed cosmic imbalance.”

“Formation of the Stars and Development of the Universe” P. Jordan, Nature **4172** 637 (1949-10) [rdcu.be/cGPUB](https://rdcu.be/cGPUB) *Jordan’s astonishing hypothesis!*

“65. The Don’t-Look-Up Syndrome of Cosmology: Chicago Cosmologists at their best; and the Hubble Tension does not exist” P. Kroupa, Dark Matter Crisis Blog (2022-1) [darkmattercrisis.wordpress.com/2022/01/21/65-the-dont-look-up-syndrome-of-cosmology-chicago-cosmologists-at-their-best-and-the-hubble-tension-does-not-exist/](https://darkmattercrisis.wordpress.com/2022/01/21/65-the-dont-look-up-syndrome-of-cosmology-chicago-cosmologists-at-their-best-and-the-hubble-tension-does-not-exist/) “The modern, successful homo cosmologicus vehemently defends their dark matter against all odds, even if it means killing the scientific method (testing and falsification of hypotheses using reproducible logical methods); they resist change to their habitat as long as the vast landscape of rewards, awards, grants and riches remains abundant” *Not David Attenborough but Pavel Kroupa.*

“Is the Hubble crisis connected with the extinction of dinosaurs?” L. Perivolaropoulos (2022-1) [arxiv.org/abs/2201.08997](https://arxiv.org/abs/2201.08997) *No comment.*

“The Quantum Bang Hypothesis: An Alternative to Dark Matter and Dark Energy” P. Tonin, Journal of High Energy Physics, Gravitation and Cosmology **6** 753 (2020-10) [www.scirp.org/journal/paperinformation.aspx?paperid=103476](https://www.scirp.org/journal/paperinformation.aspx?paperid=103476) *No dark stuff, but the Bang is still there.*

“The Asymmetric Cosmic Time – The Key to a New Cosmological Model” H. Fritsch *et al.* Int J Cosmol Astron Astrophys. **2**(1): 97 (2020-8) [madridge.org/journal-of-cosmology-astronomy-and-astrophysics/ijcaa-1000122.php](https://madridge.org/journal-of-cosmology-astronomy-and-astrophysics/ijcaa-1000122.php) *A nonsensical model, but at least it’s not  $\Lambda$ CDM.*

## 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<sup>2</sup> of the methods and investigations of cosmology. The *ACG Newsletter* highlights observational results that are anomalous in terms of the Big Bang paradigm.

The *Newsletter* is published irregularly, editor’s schedule permitting, and when interesting papers are available. ACG subscribers<sup>3</sup> receive notifications of *Newsletter* publications and a few additional announcements. You can subscribe to *ACG* by sending a request to [redshift@cosmology.info](mailto:redshift@cosmology.info).

If you would like to suggest a paper for review, please send a direct reference to [redshift@cosmology.info](mailto:redshift@cosmology.info). Published work in a refereed journal and with open access (e.g. a preprint on [arXiv](https://arxiv.org/) or [HAL](https://hal.archives-ouvertes.fr/)) is preferred.

<sup>2</sup>When the thesis is supported by empirical evidence.

<sup>3</sup>ACG currently has 65 members.