

Alternative Cosmology Group Newsletter - June 2006

Posted July 5, 2006

This has been an interesting month for cosmology, so this newsletter is more extensive than usual.

Hubble relationship

The most striking result is the claim that a laboratory experiment has measured directly the expansion of space, or rather the lack of such expansion.

The exclusion of WMAP's Hubble constant by laser interferometry

Authors: Richard Lieu, Don A. Gregory

<http://www.arxiv.org/abs/astro-ph?papernum=.+0605611>

In other developments bearing on the Hubble relationship, measurements of Gamma ray bursters are used to claim a close agreement at high z with the conventional luminosity formula. (However the results are indistinguishable from the predictions of a non-expanding universe with z proportional to distance.) The Hubble diagram extended to $z \gg 1$: the gamma-ray properties of GRBs confirm the Lambda-CDM model

Authors: C. Firmani (1,2), V. Avila-Reese (2), G. Ghisellini (1), G. Ghirlanda (1) ((1) Osserv. Astron. di Brera, Italy; (2) Instituto de Astronomia, U.N.A.M., Mexico)

<http://www.arxiv.org/abs/astro-ph?papernum=.+0605430>

Plasma-based explanation of the Hubble relation and surface brightness of galaxies.

Surface brightness in plasma-redshift cosmology

Authors: Ari Brynjolfsson

<http://www.arxiv.org/abs/astro-ph?papernum=.+0605599>

A review of redshift periodicities determines that they are statistically significant.

On the investigations of galaxy redshift periodicity

Authors: K. Bajan, P. Flin, W. Godlowski, V.P. Pervushin, to be published in Part. and Nucl. Lett. 2006

Metallicity evolution

Two papers indicate that metallicity, at least for a given galaxy size, seems not to have changed with redshift.

High Redshift Intergalactic C IV Abundance Measurements from the Near-Infrared Spectra of Two $z \sim 6$ QSOs

Authors: Robert A. Simcoe (MIT)

<http://www.arxiv.org/abs/astro-ph?papernum=0605710>

Velocity-Metallicity Correlation for high- z DLA Galaxies: Evidence for a Mass-Metallicity Relation?

Authors: C. Ledoux, P. Petitjean, J.P.U. Fynbo, P. Moller, R. Srianand

A&A in press

<http://www.arxiv.org/abs/astro-ph?papernum=0606185>

Reionization problems

The observed amount of UV radiation is insufficient at high- z to maintain observed ionization, if the density of gas is as high as predicted by Big Bang theory.

Keck Deep Fields. III. Luminosity-dependent Evolution of the Ultraviolet Luminosity and Star Formation Rate Densities at $z \sim 4, 3$, and 2

Authors: Marcin Sawicki, David Thompson

Accepted for publication in the Astrophysical Journal.

<http://www.arxiv.org/abs/astro-ph?papernum=0605406>

This difficulty may be compounded by observations of the large amount of dust produced by supernovae, further reducing UV output.

Massive-Star Supernovae as Major Dust Factories

Authors: Ben E. K. Sugerman, Barbara Ercolano, M. J. Barlow, A. G. G. M. Tielens, Geoffrey C. Clayton, Albert A. Zijlstra, Margaret Meixner, Angela Speck, Tim M. Gledhill, Nino Panagia, Martin Cohen, Karl D. Gordon, Martin Meyer, Joanna Fabbri, J. E. Bowey, Douglas L. Welch, Michael W. Regan, Robert C. Kennicutt, Jr

Published in 2006 Jun 8 edition of Science Express

<http://www.arxiv.org/abs/astro-ph?papernum=0606132>

Difficulties explaining Lithium 6 observations

Population III Generated Cosmic Rays and the Production of $Li6$

Authors: Emmanuel Rollinde, Elisabeth Vangioni, Keith A. Olive

<http://www.arxiv.org/abs/astro-ph?papernum=0605633>

Can Galactic Cosmic Rays Account for Solar $6Li$ Without Overproducing Gamma Rays?

Authors: T. Prodanovic, B. D. Fields

To be published in ApJL

<http://www.arxiv.org/abs/astro-ph?papernum=+0605675>

Rotation curves/dark matter

Observations indicate that the Milky Ways' spiral arms extend out farther than can be explained with conventional gravitational models, indicating the need to take into account magnetic fields, additional sources of matter or MOND.

The Spiral Structure of the Outer Milky Way in Hydrogen

Authors: E.S. Levine, Leo Blitz, Carl Heiles

Accepted for publication in Science.

<http://www.arxiv.org/abs/astro-ph?papernum=0605728>

Stars in the Galaxy's out halo appear to have very high M/L ratios, explaining some of the "dark matter"

The Red Halo Phenomenon

Authors: E. Zackrisson, N. Bergvall, G. Ostlin, G. Micheva, M. Leksell

Accepted for publication in ApJ

<http://www.arxiv.org/abs/astro-ph?papernum=0606218>

Review of MOND

Observational Constraints on the Acceleration Discrepancy Problem

Authors: Stacy McGaugh (University of Maryland)

Comments: 55 pages (all figures). Annotated slides from invited review for the Alternative Gravities & Dark Matter Workshop

<http://www.arxiv.org/abs/astro-ph/0606351>