

Fitting the currently accepted cosmic time scale for $(1+z) = 1100$ with light speed expanding Hubble-Hawking cosmology

U.V.S. Seshavatharam^{1*} and S. Lakshminarayana^{2†}

¹Honorary faculty, I-SERVE, Survey no-42, Hitech city, Hyderabad-84, Telangana, India

²Dept. of Nuclear Physics, Andhra University, Visakhapatnam-03, A.P, India

Emails: *seshavatharam.uvs@gmail.com (and) †Insrirama@gmail.com

Abstract: In our recently proposed papers, we have proposed new concepts and results pertaining to a very simple and practical model of quantum cosmology based on light speed expanding black hole universe having no dark matter and no dark energy. Our model can be called as Hubble-Hawking Cosmology. Big bang concept can be replaced with Plank scale. Cosmic temperature and expansion rate can be related with scaled Hawking's Black hole temperature formula. Starting from cosmic center to cosmic boundary, a decreasing trend of galactic acceleration can be understood with continuous light speed expansion at cosmic boundary. Issue of 'causal disconnection of galaxies at large scale distances' can be eliminated by cosmic black hole physical concepts. Dark matter concept can be eliminated with 'super gravity of galactic baryonic mass caused by weak interaction'. Cosmic inflation and dark energy concepts can be eliminated with 'light speed expansion'. To fit the estimated light travel distances and to eliminate the dark energy, cosmic red shift can be redefined as the ratio of change in photon wavelength to observed photon wavelength. In this contribution, up to $(1+z) = 1100$, with a great accuracy, we fit the currently believed

cosmic time scale with, $t \cong \left(\frac{1}{1+z}\right)^{\frac{3}{2}} \left(\frac{1}{H_0}\right) \cong \frac{\sqrt{1+z}}{H_t} \cong \frac{\sqrt[4]{\exp(\gamma_0 - \gamma_t)}}{H_t}$ where $\frac{H_t}{H_0} \cong \left(\frac{T_t}{T_0}\right)^2 \cong (1+z)^2$,

$H_{pl} \cong \frac{1}{2} \sqrt{\frac{c^5}{\hbar G}}$, $\gamma_0 \cong 1 + \ln\left(\frac{H_{pl}}{H_0}\right)$, $\gamma_t \cong 1 + \ln\left(\frac{H_{pl}}{H_t}\right)$, $T_t \cong \frac{\hbar c^3}{8\pi k_B G \sqrt{M_t M_{pl}}} \cong \frac{\hbar \sqrt{H_t H_{pl}}}{4\pi k_B}$, $M_{pl} \cong \frac{c^3}{2GH_{pl}} \cong \sqrt{\frac{\hbar c}{G}}$ and

$M_t \cong \frac{c^3}{2GH_t}$. It needs further study.

Authors' short biographies

U.V.S. Seshavatharam is a honorary member of I-SERVE, (Institute of Scientific Research in Vedas) Hyderabad, Telangana, India. He is having 100+ publications in numerous peer-reviewed physics journals and availing the kind guidance of retired Prof. S. Lakshminarayana associated with Dept. of Nuclear Physics, Andhra University, Visakhapatnam, A.P, India. His current theoretical interests include Nuclear quantum gravity, Quantum cosmology and Cold nuclear fusion. Under the kind guidance of Dr. Eugene Terry Tatum, he is working on 'Flat Space Cosmology' associated with light speed growing black hole universe. He is working on developing a theory for preparing gold-like costly elements with Tungsten like heavy metals via cold nuclear fusion. Extending cold nuclear fusion technology to Nuclear Fission, he is working on converting high level nuclear radioactive waste into stable and safe elements.

S. Lakshminarayana is a retired Professor in Nuclear Physics from Andhra University, Visakhapatnam, Andhra Pradesh, India. He was the former Head of the Department and Chairman, Post Graduate Board of Studies in Nuclear Physics, Andhra university. He was also a member of the advisory committees of Nuclear Physics Symposium for several years organized by Department of

Atomic Energy, BARC, Government of India. He has published 100+ research publications in National and International Journals of high repute. His fields of research include experimental Nuclear Physics, Nuclear Spectroscopy, Theoretical Nuclear and Particle Physics and Quantum cosmology.

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