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A New Interpretation of the Size of the Visible Universe and its Implications BRANISLAV VLAHOVIC, North Carolina Central University — Considered will be a three dimensional model of the universe as an expanding thin shell. Dynamics of such model has been investigated earlier. It is first introduced by Israel, in the framework of the special-relativity by Czachor, and a systematic study in framework of general relativity is done for instance by Berezin and Krisch. However, our focus will be different. Presented will be significant implications of the 3D- shell model when combined with a new interpretation of the experimental data. Consistent with this model is a new interpretation of the visible universe as a surface of a sphere (or an inside of a sphere shell) with radius 4.46 ± 0.06 Gpc and an event horizon, located on that sphere (shell), with size of 14.0 ± 0.2 Gpc. The model predicts the correct value for the Hubble constant $H_0 = 67.26 \pm 0.90$ km/s/Mpc, it predicts the cosmic expansion rate $H(z)$ in agreement with observations, and the values for the particle horizon πct_0 and the velocity of the particle horizon $2c$. It allows for an interesting explanation of the uniformity of the CMB without inflation theory. The model also explains the reason for the established discrepancy between the non-covariant version of the holographic principle and the calculated dimensionless entropy (S/k) for the visible universe, which exceeds the entropy of a black hole (and allows to eliminate this discrepancy).

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