Spherical Shell Cosmological Model and Uniformity of CMB[1]

BRANISLAV VLAHOVIC, Department of Physics, North Carolina Central University, Durham, NC, US — The paradigm of ΛCDM cosmology works impressively well and with concept of inflation it explains universe after the time of decoupling. However there are still a few concerns, namely after all efforts there is no detection of dark matter and there are significant problems in theoretical description of dark energy. We will consider a variant of cosmological spherical shell model, within FRW formalism and will compare it with the standard ΛCDM model. We will show that our new topological model satisfies cosmological principles and is consistent with observed data, the SNe Ia and CMB, but that it may require new interpretation for some data. Considered will be constrains imposed on the model by the data, as for instance the range for the size and allowed thickness of the shell. Dynamics of the shell model will be discussed and its impact on the interpretation of the comoving radius of the visible universe and interpretation of the CMB data. One prediction of this model is interpretation of the uniformity of the CMB without inflation scenario.

Branislav Vlahovic
Dept of Physics, North Carolina Central University, Durham, NC, US