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New Cosmological Model and Observational Data Interpretation

The paradigm of LambdaCDM cosmology works impressively well and with the concept of inflation it explains the universe after the time of decoupling. However, there are still a few concerns; after much effort there is no detection of dark matter and there are significant problems in the theoretical description of dark energy. We will consider a variant of the cosmological spherical shell model, within FRW formalism and will compare it with the standard LambdaCDM model. We will show that our new topological model satisfies cosmological principles and is consistent with observed data, the supernovae luminosity distance SNe Ia and CMB, but that it may require new interpretation for some data. Considered will be constraints 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.

Author: VLAHOVIC, Branislav (N)

Presenter: VLAHOVIC, Branislav (N)

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