Contribution ID : **497**   Type : **Plenary/section talk**

On the stability of extra dimensions in nonlinear multidimensional gravity with multiple factor spaces

Wednesday, 24 October 2018 17:35 (20)

We consider a multidimensional Kaluza–-Klein-like model with nonlinear curvature terms and two spherical extra spaces of dimensions m and n. The properties of an effective action for the scale factors of extra dimensions are studied. Dimensional reduction leads to an effective 4D multiscalar-tensor theory. Based on qualitative estimates of the Casimir energy contribution at a physically reasonable length scale, we demonstrate the existence of such sets of the initial parameters of the theory in the case $m = n$ that provide a minimum of the effective potential at this scale which yields a fine-tuned value of the effective 4D cosmological constant. The corresponding size of extra dimensions depends of which conformal frame is interpreted as the observational one: it is about three orders of magnitude larger than the standard Planck length if we adhere to the Einstein frame, but it is n-dependent in the Jordan frame, and its invisibility requirement leads to some restrictions on the total dimension of space-time.

Primary author(s) : Prof. BRONNIKOV, Kirill

Co-author(s) : Dr. BOLOKHOV, Sergei

Presenter(s) : Dr. BOLOKHOV, Sergei

Session Classification : Gravitation and Cosmology