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THEORY CENTER

## Seminar

### Bubble Universe (in English)

SPEAKER : Dr. Yuichi Takamizu (University of Tsukuba)

DATE : April 20th (Thur.) 15:30 ~

PLACE : Kenkyu Honkan 1F Meeting Room 1

We argue a scenario motivated by the context of string landscape, where our universe is produced by a new vacuum bubble embedded in an old bubble and these bubble universes have not only different cosmological constants, but also their own different gravitational constants. We study these effects on the primordial curvature perturbations. In order to construct a model of varying gravitational constants, we use the Jordan-Brans-Dicke (JBD) theory where different expectation values of scalar fields produce difference of constants. In this system, we investigate the nucleation of bubble universe and dynamics of the wall separating two spacetimes. In particular, the primordial curvature perturbation on superhorizon scales can be affected by the wall trajectory as the boundary effect. We show the effect of gravitational constant in the exterior bubble universe can provide a peak like a bump feature at a large scale in a modulation of power spectrum.

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