



Contribution ID: 41

Type: **not specified**

Do we live on the End of the World?

Thursday, 19 December 2024 14:00 (30 minutes)

End-of-the-World branes are codimension-one hypersurfaces that mark the ending of spacetime. Interestingly, these have been argued to be necessary ingredients in quantum gravity to prevent the presence of global symmetries. Can they also serve as braneworlds? (Spoiler: Yes.) Motivated by the Swampland Programme and in particular the Cobordism Conjecture, we propose a scenario in which a compact region of AdS_5 nucleates from nothing, with a dS_4 spacetime living on its boundary. We show that it can equivalently be interpreted as an up-tunnelling from AdS_5 with cosmological constant $\Lambda \rightarrow -\infty$, following Brown and Dahlen's proposal for 'nothing'. Their picture naïvely suggests that the brane has infinite negative tension. However, we show that it becomes finite and positive once we employ holographic renormalization, recovering the Bubble of Something, where the domain wall becomes a boundary of spacetime. The same holds true in any number of dimensions and, moreover, at the level of metric perturbations. This provides motivation for alternative routes of obtaining cosmology from quantum gravity or string theory using domain walls, departing from conventional vacuum approaches.

Primary author: MUNTZ, Benjamin (University of Nottingham)

Co-authors: Prof. PADILLA, Antonio (University of Nottingham); Prof. SAFFIN, Paul (University of Nottingham)

Presenter: MUNTZ, Benjamin (University of Nottingham)

Session Classification: Branes and Higher Dimensions