

Abstract Submitted  
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**A Breathing mode for Compactifications** BRET UNDERWOOD, Pacific Lutheran University — Reducing a higher dimensional theory to a 4-dimensional effective theory results in a number of scalar fields describing, for instance, fluctuations of higher dimensional scalar fields (dilaton) or the volume of the compact space (volume modulus). But the fields in the effective theory must be constructed with care: artifacts from the higher dimensions, such as higher dimensional diffeomorphisms and constraint equations, can affect the identification of the degrees of freedom. The effective theory including these effects resembles in many ways cosmological perturbation theory. In this talk I will briefly outline how constraints and diffeomorphisms generically lead the dilaton and volume modulus to combine into a single degree of freedom in the effective theory, the “breathing mode.”

Bret Underwood  
Pacific Lutheran University

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