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Top-down restrictions on scale-separation

Wednesday 19 July 2023 16:00 (20 minutes)

Cosmologically plausible compactification scenarios typically require parametric separation between the cosmological and the compactification length scales.
When the higher-dimensional solution is in the semi-classical regime, the full quantum-corrected equations of motion are naturally expanded in the local values of various fields. In this talk, we will present constraints on AdS scale-separation arising from requiring local control of the expansion in the warp-factor and other local fields for classes of warped AdS compactifications in 10- or 11-dimensional supergravity with quantum corrections. Through this approach, we will derive constraints on the ingredients that can produce scale-separation, reproduce certain no-go results, and comment on the compatibility of existing explicit constructions with these constraints, with emphasis on the role of quantum corrections and localized sources. We will also briefly comment on the application of this approach to de Sitter compactifications.

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