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Conformal Renormalization and Energy Functionals in AdS gravity

Within a holographic framework, we explore the physical consequences of embedding Einstein-AdS gravity in Conformal Gravity in four and six dimensions. In the bulk, the procedure is equivalent to Holographic Renormalization, as the Einstein-AdS action appears augmented by the correct boundary counterterms. In codimension-2 surfaces, 4D Conformal Gravity induces a conformal invariant which, for given conditions on the ambient space and the surface itself, reproduces different functionals: Renormalized Area, Willmore Energy and Reduced Hawking Mass.

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