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Cauchy Slice Holography

We show how to construct an explicit map between boundary states and quantum gravity states in AdS/CFT via a specific field theory path integral on a bulk Cauchy slice, rather than on the asymptotic boundary. The field theory is constructed from the boundary CFT via an irrelevant deformation, which is the analogue of the well-known $T\bar{T}$ operator in two boundary dimensions. Our construction generalises to quantum gravity theories with any Hamiltonian constraint, provided the usual algebra closure with the momentum constraints holds. This approach provides a manifestly background-independent definition of the quantum gravity theory in terms of the deformed field theory.

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