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Holographic Representation of Bulk Fields and Locality in (A)dS

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The study of local physics in a theory of quantum gravity is an important problem. (A)dS/ CFT gives us a platform to study this issue from the CFT perspective. The construction of local bulk scalars in semiclassical limit of AdS/ CFT is well-known at order by order in $1/N$ perturbation. Here we discuss the recent developments on this topic and in particular describe how to extend this program for fields with spin- 1 and higher. We work in both AdS and dS spaces. Local field construction is also made at arbitrary cut-off surfaces in (A)dS and their prospective connections to holographic RG are explored. Finally we argue about various finite N scenarios and their effects on bulk locality and black hole information paradox. Based on 1204.0126, 1408.0415, 1411.4657, 1501.XXXXX and related works.

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