

General Relativity and Quantum Cosmology

Holographic actions from black hole entropy

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Using the Wald's relation between the Noether charge of diffeomorphisms and the entropy for a generic spacetime possessing a bifurcation surface, we introduce a method to obtain a family of higher order derivatives effective actions from the entropy of black holes. Our point of view is to consider fundamental the black hole entropy and the action an emerged object. We then specialize to a particular class of effective theories: the $f(R)$ theories. We apply the idea, using a simple mind ansatz, to loop quantum gravity and to a general class of log-corrected entropy formulas.

Comments: 5 pages, 2 figures, references added

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