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Propagators in AdS for higher-derivative and nonlocal gravity

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The covariant position-space propagators for GR in the Euclidean AdS background have been known for more than 25 years (partially even before the AdS/CFT). However, due to the complicated bi-tensorial structure of these quantities, no such explicit formulas have been presented in the literature for gravitational theories beyond GR. In this talk, I will describe a new method of construction of the propagators in the N-dimensional AdS space that can be applied to any gravitational theory with the Lagrangian that is an analytic expression in the metric, curvature, and covariant derivative, i.e., to all higher- or infinite-derivative theories of gravity. It employs the Landau gauge and is based on the heat kernels for scalars and symmetric rank-2 tensors on the hyperbolic N-space. I will also comment on the correction of the derivation of the equivalent action and extension of the quadratic action to arbitrary $N \geq 3$ dimensions. The talk is based on 2307.13056.

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