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Strict Deformation Quantization in Curved Spacetimes

Abstract:
We propose a new deformed Rieffel product for functions in a curved spacetime, in particular de Sitter spacetime, and study the resulting deformation of quantum field theory in de Sitter using warped convolutions. This deformation is obtained by embedding de Sitter in a higher-dimensional Minkowski spacetime, deforming there using the action of translations and subsequently projecting back to de Sitter. We determine the two-point function of a deformed free scalar quantum field, which differs from the undeformed one, in contrast to the results in deformed Minkowski spacetime where they coincide.