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Heat kernel expansion of the Dirac-Laplacian of multifractal Robertson-Walker cosmologies

Abstract

I will talk about a recent work in which we find an explicit formula for each Seeley-deWitt coefficient in the full heat kernel expansion of the Dirac-Laplacian of the Robertson-Walker metric with a general cosmic expansion factor. We use the Feynman-Kac formula and combinatorics of Brownian bridge integrals heavily. The extension of the result to the inhomogeneous case, where the spatial part of the model has a fractal structure, will also be presented. This is joint work with Yeorgia Kafkoulis and Matilde Marcolli.