

NOYAU DE GREEN DE L'OPERATEUR DE DIRAC SUR L'ESPACE EUCLIDIEN

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Abstract

The Dirac operator D is distinguished by the fact that it factorises the Laplacian Δ , the so-called spinor harmonic functions are automatically harmonic.

The Dirac operator play an important role in modern analysis. Therefore tools in harmonic analysis can be used effectively to study that operator D .

The use of Clifford Algebras in the study of a number of aspects of mathematical analysis has steadily increast in recent years. It is becoming popular in harmonic analysis and spinoriel geometry.

In this article we are interesting to solve following equation :

$$\frac{\partial \tilde{\Psi}}{\partial t} + D\tilde{\Psi} = 0$$

where $\tilde{\Psi}$ is a spinor field.

After that, we want to find a relation between the solutions of this equation and there of heat equation

$$\frac{\partial \tilde{\phi}}{\partial t} + \Delta \tilde{\phi} = 0.$$

Moreover, we determine Green's Kernel of Dirac operator, in the case of euclidean space and its relation with the one's Laplace operator because there is a relation between D and Δ , and we express the Green's Kernel with the help Poisson's.

The technique used in this paper combines both Clifford algebra and the Fourier transformation.