The spinorial flow

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November 25, 2020

Abstract

We define a flow for connections over the spinor fiber bundle.

1 The spinor fiber bundle

Let (M, g) be a spin manifold. The spinor fiber bundle Σ is then defined. We have the Clifford multiplication of a vector with a spinor:

$$TM.\Sigma \to \Sigma$$

$$(X, \psi) \mapsto X.\psi$$

It is due to the fact that the complex Clifford algebra may be identified with the endomorphisms of the spinor space [C].

2 The spinorial flow

A flow over spinorial connections may be defined by the following formula:

$$\frac{\partial \nabla_X}{\partial t}(\psi) = \sum_i e_i.R_\nabla(e_i, X)(\psi)$$

where R_∇ is the curvature of the connection ∇ and (e_i) is an orthonormal basis of the tangent fiber bundle.

References

[C] E.Cartan, "The Theory of Spinors", Dover, USA, 2017.