

# A generalization of the Clifford algebra

A.Balan

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## Abstract

We generalize the Clifford algebra with help of a linear form. We give application to the Dirac operator.

## 1 The generalized Clifford algebra

We consider the modified relations of the Clifford algebra:

$$e \times f + f \times e + \alpha(e)f + \alpha(f)e = -2g(e, f)$$

If  $\alpha = 0$ , we have the usual Clifford algebra.

## 2 An isomorphism

We have an isomorphism with the usual Clifford algebra given by:

$$e \mapsto e + \alpha(e)/2$$

## 3 The Dirac operator

If we define representations of the Clifford algebra in the spinor fiber bundle, we can define the Dirac operator which verifies a Lichnerowicz type formula of the following form:

$$D^2 = \nabla_X D + \Delta + r$$

with  $X$  the vectors field of  $\alpha$  and  $r$  a scalar.

## 4 Bibliography

B.Lawson and M.-L.Michelson, "Spin Geometry", Princeton University Press, Princeton, 1989.