The SUSY non-commutativ geometry

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Abstract

We introduce the SUSY non-commutativ geometry and SUSY quantum groups.

1 The non-commutativ geometry

Bound to quantum mechanics, the mathematical theory of non-commutativ geometry was introduced by Connes. This theory makes use of non-commutativ spaces as a generalization of the usual spaces of geometry. The basis of non-commutativ geometry is a C-star algebra with a Dirac operator. The symmetries of these spaces are quantum groups as defined by Drinfeld.

2 The SUSY non-commutativ geometry

The supersymmetries are taking on a unique unified theory the bosons and the fermions. The commutativity and anti-commutativity are linked in the SUSY theory. So it is interessing to define the notion of SUSY non-commutativ geometry. The simplest non-commutativ fermionic space is the fermionic quantum plane:

$$xy + yx = (q - 1)(x^2 + y^2)$$

It is bound to the bosonic quantum plane:

$$xy - yx = (q - 1)(x^2 - y^2)$$

These spaces can be considered in a SUSY quantum plane. The symmetries of QSUSY (quantum SUSY) are the quantum SUSY groups.

3 Bibliography

C.Kassel, "Quantum Groups", Springer-Verlag, Berlin, 1995.