# Noncommutative gravity in the N=1 case

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July 4, 2019

**Abstract**

We show that N=1 super Yang-Mills (SYM) theory is able to be noncommutative in the N=1 case. For the basic matter charge of the theory, this is achieved by a change of the field equations. For the phase space, in particular the phase space of the SYM theory, we compute the noncommutative current equation and find that for the SyM charge the noncommutative current equation is the usual one. Then, the noncommutativity parameter leads to the existence of the noncommutative phase space of the SYM theory. This is a contribution to the forthcoming monograph 'Let's talk about GR'.

## 1 Introduction

In the recent papers **the** the authors made a generalization of the noncommutative symmetries of the Schwarzschild and D3 cases of Einstein gravity. The noncommutativity of these cases is not a trivial issue and it is a challenging topic. That is the reason that the authors of these papers have been interested in noncommutativity of the physical theories in the recently published papers [1-2] and **susy symmetry**: they have been interested in the noncommutativity of the physical theories in the cases of Lorentz symmetry and the asymmetry of the gravity equations. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the symmetries of the fields. They have been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative symmetry. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the modes of the commutative symmetry. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative symmetry. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative symmetry. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative symmetry. The authors of these papers have been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical theories in the cases of the modes of the noncommutative sy been interested in the noncommutativity of the physical

## 2 Noncommutative gravity in the N=1 case

We will now discuss the noncommutativity of the gravitational constant. We first ask the question: why is there the noncommutativity of the gravitational constant in the N=1 case? The answer is that it is a contour function of the gravitational constant. In this case, we have a noncommutative solution.

The noncommutativity of the gravitational constant can be checked by considering a more general case: the gravitational acceleration is a function of the curvature parameter. The curvature parameter is a function of the noncommutativity of the gravitational constant. If the noncommutativity of the gravitational constant is the same as the noncommutativity of the curvature parameter then we can write the gravitational acceleration in a noncommutative gauge function as

$$\varphi = \frac{1}{\sqrt{3/2}}\varphi = -\frac{\varphi}{3/2} \tag{1}$$

The noncommutativity of the gravitational constant can be checked by considering a more general case:

$$= \frac{1}{\sqrt{3/2}} = -\frac{\varphi}{3/2} \tag{2}$$

The noncommutativity of the gravitational constant can be checked by considering a more general case:

$$= \frac{1}{\sqrt{3/2}} = -\frac{\varphi}{3/2} \tag{3}$$

The noncommutativity of the gravitational constant is also checked by considering a more general case:

$$= ( \tag{4}$$

## 3 MSFT model in the N=1 case

From the first section, we will define the current for the SyM charge. For the matter, there is no time dependence. The coefficients of the phase space are given by

Q(x) $= \int\{\tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}^2 - \tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}^2 - \tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}^2 \qquad = \int\{\tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}\tilde{\kappa} - \tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}\tilde{\kappa} = \int\{\tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}\tilde{\kappa} = \int\{\tilde{\kappa}^2\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}\tilde{\kappa}$

# 4 Noncommutative gravity in the N=2 case

The generalization of the noncommutative mechanism to the N=2 case can be summarized in the following way. In the N=2 case, the dynamical mechanical parameters are given by the following expression for the Hamiltonian in the limit of the imaginary time scale $\delta$

$$H_H = \frac{1}{3}\delta^{\alpha\beta} \tag{5}$$

where $\alpha = \beta\gamma$ where $\gamma$ is the mean square of the mass $M$ of the scalar fields.

The noncommutativity parameter is given by

$$\delta^{\alpha\beta} = -\frac{1}{3}\delta^{\alpha\beta} = -\frac{1}{3}\delta^{\alpha\beta}. \tag{6}$$

This value of $\delta$ can be obtained by setting $H_H$ to be

$$H_H = \int_\alpha \phi^{\alpha\beta} \tag{7}$$

where $\alpha$ is the noncommutative field $\alpha_\mu$ and $\beta$ is the commutative field $\beta_\mu$.

The noncommutativity parameter can be calculated by multiplying the noncommutativity parameters of the SMT in $H_H$ by the following expression

$$\text{align } \delta^{\alpha\beta} = -\frac{1}{3}\delta^{\alpha\beta} = -\frac{1}{3}\delta^{\alpha\beta} = -\frac{1}{3}\delta^{\alpha\beta} = -$$

# 5 Noncommutative GR in the N=2 case

We have just seen that the noncommutativity parameter of the GR wave function is zero. This means that the noncommutativity parameter of the GR wave function is given by

$$-\frac{g_{\mu\nu}}{g_{\mu\nu} + \frac{2\pi}{\sqrt{g_{\mu\nu}} - \frac{2\pi}{\sqrt{g_{\mu\nu}} - \frac{2\pi}{\sqrt{g_{\mu\nu}} = 0,}}}} \tag{8}$$

where $\gamma_\mu$ is the Lorentz covariant covariant coupling constant $\Gamma = \Gamma(\Gamma(\Gamma_{\mu\nu}))$ and $\gamma^2$ is the product of the Lorentz covariant and the noncommutative covariant coupling constants $\Gamma_{\mu\nu}$.

The noncommutativity parameter of the GR wave function is not a constant $\Gamma_{\mu\nu}$ but a function $\Gamma_{\mu\nu}$ chosen by the operator $\Gamma_{\mu\nu}$ as a function of $\Gamma_{\mu\nu}$ (see Table 1). The noncommutativity parameter $\Gamma_{\mu\nu}$ is obtained by changing the form of $\Gamma_{\mu\nu}$ into a function with the form $\Gamma_{\mu\nu}$ which is defined by

$$\Gamma_{\mu\nu} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3}\Gamma_\mu \tag{9}$$

# 6 Noncommutative GR in the N=1 case

We have now established that the noncommutativity of the QED is a consequence of the fact that the classical and conventional fields are strictly zero. This fact can be tested in the following way. In we have found that the noncommutativity of the QED is a consequence of the fact that the classical and conventional fields are non-intersecting. This means that the noncommutativity is not only the classical one, but also the conventional one. As we have seen, a change of the field equations yields an equation which is the classical one. However, the noncommutativity can be achieved by a change of the noncommutativity parameter $k$. In this case, the non-commutativity is the classical one and the non-commutativity is the non-commutative one.

The noncommutativity of the QED can be verified in the following way. In we have obtained the classical chaotic QED. It corresponds to the noncommutativity of the QED because $k' = 0$. Then, the noncommutativity is the classical one

# 7 Noncommutative AGW in the N=1 case

We will now consider the case of the N=1 model. In this case, the noncommutativity of the phase space is assumed, and the noncommutativity of the current is assumed to be a real field. This is done by changing the field equations to

(10)