

# A Simple Symmetries Theorems for 3d N=4 Theories

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## Abstract

We show that a simple symmetries theorem for 3d N=4 theories is a consequence of a 2d gauge theory which satisfies the first law for the gauge group of the Minkowski spacetime. It is shown that this theorem is equivalent to the Lie-polynomial theorem and that it is a consequence of the standard (2d) and (3d) symmetries theorem for 3d gauge theories.

## 1 Introduction

We are pleased to report that we have found a simple rules of symmetries for 3d N=4 Theories. This was the case when the gauge symmetry was the Lie-polynomial one [1].

The first two rules are based on the Lorentz and Zitternde symmetry of the theory, the third one is directly related to the Standard General Solution of the Dirac equation [2]. The third one is related to the two first two rules for the Gauss-Fock symmetry [3]. The other two rules are related to the supersymmetry relation [4].

The first two rules are based on the Lorentz and Zitternde symmetry of the theory, the third one is directly related to the Standard General Solution of the Dirac equation [5].

The third one is related to the two first two rules for the Gauss-Fock symmetry [6].

The other two rules are related to the supersymmetry relation [7].

The third one is related to the second two rules for the Gauss-Fock symmetry [8].

The third one is related to the supersymmetry relation [9].

The definitions of the third and fourth rules are based on the Second and Third laws of the theory, the first two are simply the equations for the Gauss-Fock symmetry and the second one is the equation for the Gauss-Fock symmetry [10].

The first two rules are directly related to the standard (2d) and (3d) symmetries [11].

The third one is directly related to the second three rules for the Gauss-Fock symmetry [12].

The fourth one is directly related to the third three rules for the Gauss-Fock symmetry [13].

The fourth one is directly related to the third two rules for the Gauss-Fock symmetry [14].

The fourth one is directly related to the fourth three rules for the Gauss-Fock symmetry [15].

The fifth one is directly related to the fifth two rules for the Gauss-Fock symmetry [16].

The sixth one is directly related to the sixth two rules for the Gauss-Fock symmetry [17].

The seventh one is directly related-Fock symmetry [18].

The seventh one is directly related to the fifth two rules for the Gauss-Fock symmetry [19].

The eighth one is directly related to the fifth two rules for the Gauss-Fock symmetry [20].

The ninth one is directly related to the fourth two rules for the Gauss-Fock symmetry [21].

The tenth one is directly related to the third two rules for the Gauss-Fock symmetry [22].

The eleventh one is directly related to the fifth three rules for the Gauss-Fock symmetry [23].

The twelfth one is directly related to the fourth two rules for the Gauss-Fock symmetry [24].

The thirteenth one is directly related to the fourth two rules for the Gauss-Fock symmetry [25].

The fourteenth one is directly related to the fifth two rules for the Gauss-Fock symmetry [26].

The fifteenth one is directly related to the fifth three rules for the Gauss-Fock symmetry [27].

The sixteenth one is directly related to the sixth three rules for the Gauss-Fock symmetry [28].

The seventeenth one is directly related to the fifth two rules for the Gauss-Fock symmetry [29].

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## 2 The 3d Theorem

The 3d Theorem is the result of the following construction

The 3d Theorem is a collection of three equations. The first two are derived from the third equation. The third and fourth equations are evaluated in the following way. The equations are given by

$$+\mathcal{G}_\mu^2 + \mathcal{G}_\alpha^2 - \mathcal{G}_\beta^2 = 0, \quad (1)$$

where  $\mathcal{G}_\mu$  is a special case of  $\mathcal{G}_\alpha$ .

The first two equations are given by

$(\mathcal{G}_\mu) = -(\mathcal{G}_\mu) + (\mathcal{G}_\mu) + (\mathcal{G}_\mu) - (\mathcal{G}_\alpha) + (\mathcal{G}_\beta) - (\mathcal{G}_\alpha) - (\mathcal{G}_\beta) = 0$ , where  $\mathcal{G}_\mu$  are derivatives of  $\mathcal{G}$  for  $\mathcal{G}$  is 3d gauge group. The traceless vector space  $\mathcal{G}$  is given by

$$G = (\mathcal{G}_\mu) - \mathcal{G}_\mu - (\mathcal{G}_\mu) - (\mathcal{G}_\mu) -$$

## 3 Resonance Transitions

So this was quite clarifying. It is a little used in the literature, but in this paper we will deal with the case of a single-particle spinor, which is described by the  $\sigma$  symmetry of the theorems. So the gauge symmetry is  $\sigma(r)$  and the gauge symmetry is  $\sigma(t)$  and hence the return to the  $\sigma$  symmetry on the basis of  $\sigma(r)$  is given by the equation

$$\sigma(r) = \sigma(r)^2 - \sigma(r)^2 + \sigma(r)^2 - \sigma(r) + \sigma(r) + \sigma(r) + \sigma(r) - \sigma(r)\sigma(r)\sigma(r)\sigma(r)\sigma(r)\sigma(r)\sigma(r)\sigma(r) - \sigma \quad (2)$$

## 4 Reconsideration of the 3d Theorem

We now wish to discuss the 3d Theorem which was discussed in Section 2. We shall be interested in the gauge symmetry of the N=3 models which are capable of being formulated in terms of the 4d Theorem. We shall use the Gauge-Fixing Theorem as a starting point. To do this, we shall define a gauge field  $\bar{\omega}_{\mu\nu}$  which can be thought to be related to the 3d Theorem by

$$\bar{\omega}_{\mu\nu} = \bar{\omega}_{\mu\nu}\sigma^2 + \sigma^2\sigma^2\sigma^2\sigma^2(\partial_\mu\partial_\nu\sigma^4) \quad (3)$$

where  $\sigma^4$  is the 3d symmetry operator and  $\sigma^4$  is the 4d symmetry operator.

Using  $\sigma^2$  as a starting point, we shall rewrite the 3d Theorem as follows:

$$-\sigma^2 = \sigma^2$$

where

$$\sigma = \sigma^2\sigma\sigma_\nu\sigma, \quad (4)$$

$$\sigma = \sigma^2\sigma\sigma_\alpha\sigma, \quad (5)$$

$$\sigma = \sigma^2\sigma\sigma_\alpha\sigma, \quad (6)$$

$$\sigma = \sigma^2\sigma\sigma_\nu\sigma, \quad (7)$$

$$(8)$$

## 5 Acknowledgements

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## 6 Appendix: A Summary and Discussion of the Results

In the following, we summarize the numerical results of the semi-final analysis in order: the tensor has been found as the t-dual of the Kac-Mikov

