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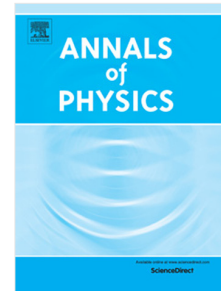
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Superstrings with the Galileon Measure.

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Abstract

The modified measure theories recommend themselves as a good possibility to go beyond the standard formulation to solve yet unsolved problems. The Galileon measure that is constructed in the way to be invariant under the Galileon shift symmetry is considered in the context of superstring theory. The translation invariance of the vacuum holds up to a Galileon transformations. The supersymmetric action is presented with all terms, including the tension, being derived from the equations of motion.

1 Introduction

The action of a physical system is a Lagrangian density, L , integrated over the D -dimensional spacetime. In General Relativity the invariant volume element is usually constructed out of the tensor densities, namely, the determinant of the metric, g , and the volume element, $d^D x: \sqrt{-g}d^D x$. However, its modifications carry us beyond the standard theory. A long-standing problems become solvable. This paper is devoted to Galileon measure theory (GMT) [1] and its big brother - Two measure theory (TMT) [2].

The former is originated from the Galileon modification of gravity [3, 4, 5]. It is a scalar-tensor theory with a nonminimal coupling of the special scalar Galileon to curvature, with the second order equations of motion and nonetheless, without ghosts. This theory is invariant under a Galileon shift symmetry. This very symmetry is a base for this measure.

The later provides a thought out answers for the cosmological constant problem [6], the emergent universe scenario [7], the fifth force problem [8], the Dark Energy/Dark Matter scenarios [9].

Due to the evident success in gravity, we apply here the modified measures to String Theory [10, 11, 12, 13]. Beside the general incompleteness, the theory of all matter and interactions contains the dimensionfull parameter - the tension of the string. This problem is contemplated in TMT and GMT.

When including the fermions, the supersymmetry is required. In the Green-Schwarz

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