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THE SCHWINGER MODEL ON THE NULL-PLANE

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We study the Schwinger Model on the null-plane using the Dirac method for constrained systems. The fermion field is analyzed using the natural null-plane projections coming from the γ-algebra and it is shown that the fermionic sector of the Schwinger Model has only second class constraints. However, the first class constraints are exclusively of the bosonic sector. Finally, we establish the graded Lie algebra between the dynamical variables, via generalized Dirac bracket in the null-plane gauge, which is consistent with every constraint of the theory.

Keywords: null-plane; Hamiltonian method; Schwinger model.

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1. Introduction

Half the of last century Dirac[1] proposed three different forms of relativistic dynamics depending on the types of surfaces where independent modes were initiated. One of them is the *front form*, which is a surface of a single light wave, commonly referred to as *null-plane* (*light-front or light-cone*) formalism. A notable feature of a relativistic theory on the null-plane is that it gives rises to a constrained dynamical system.[2] Srivastava[3] studied the light-front quantization of the bosonized version of the Schwinger model in the continuum formalism, the propose of his work was to show that the quantization of the massless Schwinger model on the light-front

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