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S.Q.E.D.2 on the null plane using Faddeev-Jackiw quantization

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Half a century ago Dirac has proposed three different forms of relativistic dynamics depending on the types of surfaces where independent modes were initiated. The first possibility when a space-like surface is chosen (instant form) has been used most frequently so far and is usually called equal-time quantization. The second choice is to take a surface of a single light wave (front form or null-plane). The third possibility is to take a branch of hyperbolic surface (point form). In this paper we are going to study S.Q.E.D.2 on the null-plane and we will show that one of the first class constraints of the theory has a contribution provided by the scalar sector and in addition the theory has a second class constraint in the scalar sector which is manifest in the free case. It is not natural in the instant form. The Faddeev-Jackiw procedure for constrained system is applied to calculate the commutation relations of the theory.

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