Review of: "Spin-statistics Theorem from the Stuart-Landau Equation"

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In this brief report the connection between the Stuart-Landau equation used to study bifurcations in non-linear oscillators and spin-statistics theorem is investigated within the quantum field theory framework. It is demonstrated, by means of simple arguments, that this connection is possible in particular focusing on the ultraviolet sector of field theory. The core of the study is the partitioning of the bifurcation diagram into three spin phases and the interpretation in terms of creation of a Higgs field and a demonstration of the spin-statistics theorem by means of the continuous spin phase. This argument has been extended also generalizing Stuart-Landau equation (Eq. (4)) to two dimensions in the variables x and y.

I really like this analysis which does not claim to be a general theory but it could be an excellent starting point to deepen the argument with more detailed studies, as indeed pointed out by the author himself who presented his ideas in a draft form.

In my opinion, for the challenging topic presented, the results obtained and the potential advances in the field, this report merits publication in Qeios.

However, prior to publication, I would suggest the following:

1. How much the working assumptions A1, A2 and A3 affect the general conclusions? I understand that the analysis focuses on the deep ultraviolet sector characterized by fluctuations but could in principle the analysis be extended to other sectors under reasonable approximations?
2. I think that more details about the illuminating interpretation in three spin phases of the diagram on the bifurcations predicted by the SL model shown in Fig.1 could be very useful for a reader.
3. What is the relationship with Lyapunov stability and Lyapunov coefficients? Looking at SL equation (Eq. (4)) where the Lyapunov coefficient can be extracted and what would mean in terms of stability? Should it be identified with the coefficient u which from real becomes complex?
4. It is not clear to me how the continuous spin phase at mu = 0 demonstrates the spin-statistics theorem of QFT allowing a distinction between bosons and fermions and how in higher dimensions (D = 4) it justifies the formation of dark matter. Further details would be helpful for a reader.
5. Why in Eq.(1b) the fine-structure constant alpha depends on alpha itself?