Review of: "Numerical Evaluation of a Soliton Pair with Long Range Interaction"

Akuamoah Worlanyo[1]

1 Ho Technical University

Potential competing interests: No potential competing interests to declare.

The provided manuscript appears to describe a theoretical investigation into the interaction energy of electric or magnetic monopole pairs within the context of a Coulombic field. Let's break down the key points:

1. **Monopoles Representation:** The manuscript discusses representing monopoles by topological solitons of finite size and mass. These solitons are described by a field of SO(3) rotations without any divergences. This suggests a method for modeling electric or magnetic monopoles in a specific way that avoids singularities.

2. **Coulombic Interaction:** At large distances, these monopoles exhibit a pure Coulombic interaction. Coulombic interactions are characteristic of electric charges, and the mention of a pure Coulombic interaction suggests a straightforward, long-range force behavior.

3. **Test for Physical Interpretation:** There is a mention of a crucial test for the physical interpretation of these monopoles. Specifically, the focus is on the classical running of the charge at small distances, which is expected due to the finite soliton size. This test is likely aimed at ensuring the consistency and validity of the proposed monopole model.

4. · **Effective Charge Increase:** The Manuscript talks about the investigation of the increase of the effective charge at a few soliton radii in this purely Coulombic system. This observation is likely a significant result of the study and may have implications for the understanding of monopole behavior.

5. · **Comparison with QED:** The Manuscript mentions a comparison with the running of the coupling in perturbative QED (Quantum Electrodynamics). This implies that the study is placing its findings in the con Manuscript of a well-established quantum field theory, suggesting an attempt to connect the theoretical framework used for monopoles with the known behaviors in the quantum realm.

6. In summary, the Manuscript outlines a theoretical study involving the representation and interaction of electric or magnetic monopoles using topological solitons. The focus is on understanding their behavior at different distances, particularly the classical running of the charge at small distances, and comparing the results with the established framework of perturbative QED

The work is well presented; however, the following needs to be addressed before published:

1. Improved upon the grammar in the entire write up

2. References should be updated (current)