

# Review of: "Supersymmetry Via EDM (Electric Dipole Moment)"

Alessandro Rizzo

Potential competing interests: No potential competing interests to declare.

Dear Author,

As Richard Feynman once said, there is nothing wrong with making **educated guesses** in science. **Indeed, the heuristic method is fundamental for scientific progress.** Just as Einstein turned to mathematicians like Gregorio Ricci-Curbastro and Tullio Levi-Civita to make his theory more credible, it is crucial to recognize, as Wittgenstein noted, that **the limits of our language are the limits of our world.**

Therefore, I suggest engaging in concrete mathematical discussions here to evaluate your hypotheses in a peer review process. This will help optimize your scientific article.

Your article doubtless explores an ambitious quantum-gravitational approach to unify fundamental aspects of particle physics and gravity. The central idea is that the interaction of photons and gravitons possessing electric dipole moments (EDM) could explain the origin of particle masses.

Well, I think to strengthen your proposal, you should consider **focusing** on the following key points. I'll try to translate your ideas mathematically, but it is not easy to capture your thoughts, which are indeed complex:

## 1. Mathematical Formalism:

Develop the mathematical formalism underlying your Vector-Tensor-Scalar (VTS) Geometry framework more explicitly. Derive equations extending this framework to all Standard Model particles. For instance:

- Quarks:  $m_q = \pm \left( \frac{2}{3} \text{ or } \frac{1}{3} \right) p \times g$

- Leptons:  $m_l = \pm 1 p \times g$  (charged),  $m_\nu = \pm \epsilon p \times g$  (neutrinos)

- Gauge Bosons:  $m_\gamma = 0$ ,  $m_W = \pm 1 p \times g$ ,  $m_Z = 0 p \times g$ ,  $m_{\text{gluon}} = \pm \epsilon p \times g$

- Higgs Boson:  $m_H = 0 p \times g$

Show how particle interactions (strong force, electroweak force, Higgs mechanism) naturally emerge in this framework. Clarify the motivation for introducing VTS Geometry as a new formalism.

**Brief Note:** Given that tensors are generalizations of scalars and vectors, it is worth considering why the Vector-Tensor-

*Scalar (VTS) framework is used instead of directly employing tensors. This choice should be clearly justified, as it will help readers understand the specific advantages of the VTS approach in your theoretical model.*

## 2. Experimental Connections:

Link your theoretical framework to possible experimental tests. Precise calculations of the effects of photon-graviton EDM interaction on light deflection near massive bodies could be compared with astronomical observations. High-energy photon experiments might reveal small deviations from expected trajectories, indicating a photon EDM. More precise mass measurements of particles, especially neutrinos and gluons, could test your predictions.

## 3. Topological Considerations:

Provide more mathematical substantiation for your topological ideas involving Mobius strips and Klein bottles in particle structure. Explicitly show how these emerge from VTS Geometry and lead to properties like spin. Explain how Mobius strips combine to form particles that require a 720-degree rotation to return to their initial state and how pairs of Mobius strips (Klein bottles) form gravitons.

## 4. Comparison with Other Theories:

Discuss how your EDM and VTS Geometry approach relates to other unification attempts such as string theory or loop quantum gravity. Highlight key differences and potential observable consequences to demonstrate the originality and value of your framework.

### Specific Feedback

#### Quantum Spin and EDM:

- Your discussion of the quantum spin of particles and their electric dipole moments is intriguing. Ensure that these concepts are accurately described and linked to the overall hypothesis.

### Conclusions

I think your article contains good ideas for explaining the origin of mass and unifying forces. The VTS Geometry and the role of EDM are quite interesting concepts. However, to realize their full potential, these ideas need further development in terms of mathematical rigor, empirical connections, and comparison with existing physics. I encourage you to continue refining your work with these goals in mind.

### IMPORTANT NOTE:

**Anyway, considering the breadth of topics covered in a single article, such as the connections with the Riemann hypothesis, Wick rotation, Mercury's precession, dark matter, and the Hodge conjecture, there is a serious risk of getting lost and stuck in developing a coherent and solid demonstrative apparatus. Therefore, in my humble opinion, I suggest focusing on the origin of mass and what this framework provides beyond Peter Higgs' contributions.**

*Thus, a 2/5 rating on the article should not be discouraging but rather serve as motivation to refine and enhance your theory and make it clearer to the scientific community and readers—you are only halfway there. Scientific research should never be discouraged; the heuristic method is always a source of scientific debate.*

Best regards,

Alessandro Rizzo