Contribution ID: **144** Type: **Poster**

Neutron Spin Structure, Yang-Mills Theory, and the Mass Gap

An analysis of proton structure and spin based upon an electromagnetic model of geometric wavefunction interactions was presented to Spin 2016 [1]. A key point of that analysis was the supposition that only observed components of the eight-component Pauli wavefunction (electric charge, magnetic flux quantum, and magnetic moment) comprise the stable proton wavefunction. The dark components (magnetic charge, electric flux quantum, electric moment) cannot couple to the photon due to topological symmetry breaking of pseudoscalar magnetic charge[2]. Their impedance mismatch to the vacuum wavefunction and the resulting differential phase shift is the causal agent of decoherence, rendering wavefunctions containing dark components unstable[3, 4]. An unstable neutron wavefunction might then be extracted from the S-matrix by swapping one or more dark components for visible. Several possibilities exist. This Spin 2018 abstract submission[5] proposes to explore those possibilities, in hope of extending the Spin 2016 analysis to the neutron geometric wavefunction, thereby improving understanding of the anomalous moment[6] and illuminating the foundation of this Yang-Mills isospin pair[7].

[1] M. Suisse and P. Cameron, "Quantum Interpretation of the Proton Anomalous Magnetic Moment" in Proceedings of 22nd International Spin Symposium, Urbana-Champaign (2016). As of this writing the proceedings have not yet appeared.
The poster may be found here http://vixra.org/abs/1609.0422
and the companion video here https://www.youtube.com/watch?v=uyM4cZgSprI&t=19s
[2] E. Witten, "Duality, Spacetime, and Quantum Mechanics", Physics Today, p.28-33 (May 1997)
[3] P. Cameron, "Generalized Quantum Impedances: A Background Independent Model for the Unstable Particles" (2012)
http://arxiv.org/abs/1108.3603
[4] P. Cameron, "Impedance Representation of the S-matrix: Proton Structure and Spin from an Electron Model", accepted for presentation at 22nd International Spin Symposium, Urbana-Champaign (2016). http://vixra.org/abs/1605.0150
[5] http://spin2018.unife.it/
[6] M. Suisse and P. Cameron, "Quantum Interpretation of the Neutron Anomalous Magnetic Moment", submitted to Spin 2018.
[7] http://www.claymath.org/sites/default/files/yangmills.pdf

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Track Classification: Fundamental Symmetries and Spin Physics Beyond the Standard Model