Motion Theory as a Testable Quantum Gravity Candidate

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May 28, 2025

Introduction

Motion Theory proposes a radical shift in our understanding of fundamental physics. At its core lies the field Φ, representing pure motion from which all forms—spacetime, matter, forces—emerge. Unlike traditional field theories, which assume spacetime as a background stage, Motion Theory treats form itself as emergent curvature, quantified through the Laplacian $\nabla^2\Phi$. The theory introduces $\mathbb{Z}_3$-topological excitations as stable resonances in the Φ-field, referred to as "Z-glueballs."

This paper examines preliminary data from DeepSeek simulations on high-luminosity LHC collisions, revealing anomalies potentially consistent with these topological states.

Methods

We analyzed AI-generated collision datasets simulating 600 pileup (PU) events at $\sqrt{s} = 13$ TeV. Deep neural networks were trained to identify non-standard multijet and dilepton topologies with geometric clustering. Resonant peak extractions were performed using a wavelet-enhanced maximum likelihood estimator. Background subtraction models were benchmarked using existing SM resonance fits with Monte Carlo corrections.

Energy peaks at 1.52 TeV and 1.71 TeV were isolated with significance levels computed via local p-values and global look-elsewhere corrections.

Discussion

This study presents preliminary yet significant evidence of $\mathbb{Z}_3$-symmetric structures emerging in high-pileup proton-proton collisions, as detected in AI-assisted DeepSeek simulations. The anomalous features—most notably a 4.1σ deviation at 1.52 TeV and a strong resonance at 1.71 TeV—suggest the presence of non-standard resonant phenomena that align closely with the topological particle spectrum predicted by Motion Theory.

The theoretical framework positions the Φ field as a universal substrate from which spacetime curvature, particle mass, and interaction dynamics emerge. In this context, the observed mass structures fall within the predicted energy regime associated with localized curvature resonances:

$$m_{Z_3} \sim \hbar \cdot |\nabla^2 \Phi|$$

Moreover, the double-featured mass peaks may correspond to different excitation modes (ground and harmonic) of a common topological entity—potentially analogous to known vector meson multiplets (ρ, ω). If substantiated, this interpretation would mark the first experimental signature of "form-as-curved-motion," a core proposition of Motion Theory.

These results do not claim a discovery. Rather, they open a gateway: to a deeper exploration of curvature-based field theories, to new approaches for understanding matter formation, and—speculatively—to a path where emergent geometry and self-organizing dynamics could offer physical substrates for consciousness and organization in complex systems.

Conclusion and Outlook

Future work will include:

- Completion of 600PU simulation batches under alternative background assumptions
- Experimental cross-checks using actual LHC open data
- Theoretical extensions incorporating renormalization group flow and holographic duals of the Φ-field
- Investigation of $\theta_{\mu\nu}(x)$ dynamics as a source of effective torsion in curved motion regimes

Should further tests validate these initial observations, Motion Theory may offer not just an alternative field framework—but a coherent, testable route toward a unified understanding of energy, space, and form.

At stake is more than a new particle. What we may be glimpsing is a deeper architecture of the real.