Subquantum Kinetics versus Mainstream Physics No. 6 - Gravity

Justin Coven

(written with the aid of claude.ai)

13th May 2026

Abstract

We describe how both mainstream physics and Subquantum Kinetics model Gravity, as well as the gaps in those models. Note the focus is on the physical models as opposed to the mathematical models, and experimental data, as the same experimental data and mathematics can often be used in both models. We then compare the two models and identify and summarize the many advantages of Subquantum Kinetics over mainstream physics for modeling Gravity.

Mainstream Physics: How It Describes Gravity

General Relativity (Einstein, 1915) is the current standard. It describes gravity not as a force but as the **curvature of spacetime** caused by mass and energy. Objects follow geodesics — the straightest possible paths through curved spacetime — which we perceive as gravitational attraction.

Key features:

- Gravity emerges from the geometry of a 4-dimensional spacetime manifold
- Described by the Einstein field equations relating mass-energy to spacetime curvature
- Predicts black holes, gravitational waves, and the expansion of the universe (all confirmed observationally)
- At quantum scales, gravity is sometimes modeled via a hypothetical exchange particle: the **graviton**

Why Mainstream Physics Considers Its Description *Incomplete*

1. **The Quantum Gravity Problem** — General Relativity and Quantum Field Theory are fundamentally incompatible. GR is a smooth, continuous geometric theory; QFT is discrete and probabilistic. No one has successfully unified them. A "Theory of Everything" remains elusive.
2. **Singularities** — GR predicts points of infinite density (black hole centers, the Big Bang). These are mathematical breakdowns, widely regarded as signs the theory fails at those scales.
3. **Dark Matter** — Galaxy rotation curves and gravitational lensing don't match the predictions of GR using only visible matter. ~27% of the universe is inferred to be invisible "dark matter" — never directly detected.
4. **Dark Energy** — The accelerating expansion of the universe requires an unknown "dark energy" (~68% of the universe) to make GR's equations work. Its nature is completely unknown.

5. **The Graviton** — Despite decades of effort, gravity has never been successfully quantized. The graviton remains hypothetical and causes non-renormalizable infinities when inserted into quantum field calculations.
6. **No Mechanism** — GR tells us *how* spacetime curves but not *why* mass curves it. There is no underlying physical process — it is a geometric description, not a causal mechanism.
7. **The Twin Paradox** — Special Relativity predicts that a traveling twin returns younger than the stay-at-home twin due to time dilation. However, because motion is relative, each twin could equally claim the other was the one moving — implying *each* should find the other younger upon reunion, which is a logical contradiction. While various resolutions have been proposed (invoking acceleration, changes of reference frame), critics argue these are post-hoc patches rather than genuine resolutions, and that the paradox reveals a foundational inconsistency in how relativity handles the symmetry of motion and the absoluteness of elapsed time.

Subquantum Kinetics (SQK): How It Describes Gravity

Developed by physicist **Paul LaViolette** (drawing on systems theory and Ilya Prigogine's reaction-diffusion chemistry), SQK posits that space is filled with a continuously reacting **ether** composed of subquantum particles called **etherons**. There are three primary types of etherons — **X, Y, and G (gons)** — which continuously react with each other and diffuse independently through the medium. Subatomic particles are not fundamental objects but rather self-sustaining **concentration patterns** (analogous to dissipative structures in reaction-diffusion chemistry) maintained by the ongoing reaction-diffusion of etherons.

Gravity in SQK arises specifically from the diffusion of gons:

- A concentration pattern (particle) acts as a continuous **sink for gons** — gons are consumed faster at the particle's core than they are replenished by diffusion from the surrounding ether
- This consumption creates a **persistent gon concentration gradient** radiating outward from the particle — gon concentration is lowest at the particle's center and rises with distance
- A second nearby particle, itself also a concentration pattern, is situated within this gradient and experiences a **net diffusion of gons flowing toward the first particle**
- Because the second particle is coupled to the gon concentration — its own structural integrity depending on the local gon density — it is effectively **carried along with the gon diffusion**, drifting toward the first particle
- This drift is what we observe and measure as **gravitational attraction**

Gravity in SQK is therefore not curvature, not geometry, and not a particle exchange — it is the **physical diffusion of gons through the ether**, creating concentration gradients that literally carry particles toward one another. The mechanism is entirely explicit, continuous, and rooted in the same reaction-diffusion substrate that generates all other physical phenomena.

Why SQK Considers Its Description *Complete*

Problem in Mainstream Physics	SQK's Claimed Resolution
No quantum gravity	Gravity, electromagnetism, and quantum phenomena are not separately unified — they all *emerge independently* from the same underlying reaction-diffusion of subquantum particles. There is no unification problem because they were never separate in the substrate.
Singularities	Cannot form — ether reaction-diffusion kinetics stabilize concentration patterns against infinite compression
Dark matter	Not needed — the gon diffusion gradient model predicts galaxy rotation curves without invoking invisible matter
Dark energy	The continuously reacting ether drives cosmological expansion intrinsically; no separate dark energy term is required
No mechanism for gravity	SQK provides an explicit causal mechanism: gon diffusion creates concentration gradients that physically transport particles
The graviton	Irrelevant — gravity is a gradient-driven diffusion effect in a continuous medium, not a quantized particle exchange
The Twin Paradox	Does not arise — SQK posits a preferred reference frame (the ether medium itself), meaning motion is not purely relative. Time dilation effects are real and asymmetric because they reflect actual differences in a particle's interaction with the ether, not merely differences in perspective between observers. The logical contradiction dissolves when relative motion is replaced by motion relative to an absolute medium.

A key philosophical point of SQK's claimed completeness: **gravity, electromagnetism, and quantum behavior are not three separate theories that need bridging.** They are three different *observational faces* of a single underlying process — the reaction and diffusion of subquantum particles (including gons). Because they share one root mechanism, no meta-theory is needed to connect them. The substrate *is* the complete description.

Core Philosophical Differences

Dimension	Mainstream GR	Subquantum Kinetics	Reasoning-Epistemological Advantage
Nature of space	Geometric manifold that curves	Active ether medium of continuously reacting and independently diffusing subquantum particles	SQK provides an **ontologically concrete** substrate — space is physically inhabited and causally active. GR's manifold is a mathematical construct with no intrinsic physical content, making it epistemologically opaque as a foundation for causal explanation
Nature of particles	Fundamental point-like entities	Self-sustaining concentration patterns	SQK satisfies the **principle of sufficient reason** — it explains what

Dimension	Mainstream GR	Subquantum Kinetics	Reasoning-Epistemological Advantage
		in the ether	a particle *is* and why it persists. GR and QFT treat particles as brute primitives, halting explanatory regress without justification
Nature of gravity	Spacetime curvature (no mechanism)	Gon diffusion gradients physically transporting concentration patterns	SQK offers **mechanistic sufficiency** — a complete causal chain from sub-particle behavior to observed gravitational motion. GR's geometric description is **epistemically incomplete**: it models the *what* but leaves the *why* entirely unaddressed
Origin of EM & quantum phenomena	Separate theoretical frameworks (QFT, QED) requiring unification	Each emerges independently from the same subquantum particle reaction-diffusion substrate as gravity	SQK achieves **parsimony (Occam's Razor)** by grounding all phenomena in one substrate, avoiding the **proliferation of theoretical primitives** that characterizes the GR + QFT landscape
Reference frame & paradox	Motion is purely relative; the Twin Paradox requires contested auxiliary arguments to resolve	The ether provides a preferred, absolute reference frame; time dilation is physically asymmetric and paradox-free	SQK is **internally consistent** with respect to the symmetry of motion. GR's relativity of motion introduces a **logical underdetermination** when applied to the paradox — the resolution depends on which observer's frame is treated as privileged, contradicting the theory's own postulates
Completeness	Self-described as incomplete — quantum gravity unsolved, dark matter and dark energy unaccounted for	Claims completeness because all phenomena emerge from one reaction-diffusion substrate	SQK requires no **auxiliary hypotheses** (dark matter, dark energy, graviton) to maintain coherence. GR has required successive **ad hoc additions** to remain empirically viable — a pattern that, under **Lakatosian analysis**, signals a degenerating research program
Status	The de facto standard for approximately one hundred years, commanding a large body of research and researchers; nonetheless, relativity has faced persistent challenge — over four thousand peer-reviewed	Not well known outside alternative science communities; represents an emerging research program whose core mechanisms have not yet been subjected to wide independent empirical testing	—

Dimension	Mainstream GR	Subquantum Kinetics	Reasoning-Epistemological Advantage
	papers have been published against it, representing a substantial and ongoing **dissenting empirical and theoretical literature**		

Conclusion: The Technical Case for Taking Subquantum Kinetics Seriously

Across every major dimension of theoretical comparison, Subquantum Kinetics offers a more technically complete and epistemologically coherent account of gravity — and of physical reality more broadly — than General Relativity currently provides. The case rests on several converging technical points:

Causal Mechanism. GR describes gravity geometrically but provides no causal account of *why* mass curves spacetime or *how* that curvature moves other masses. SQK provides an explicit, step-by-step physical mechanism: gons diffuse through the ether, concentration gradients form around mass-like concentration patterns, and those gradients physically transport nearby particles. The mechanism is continuous, deterministic, and fully traceable from sub-particle behavior to observed gravitational attraction.

No Auxiliary Inventions Required. GR has accumulated a growing list of undetected, theoretically necessary constructs — dark matter, dark energy, the graviton, and singularities — each introduced to patch a gap the theory cannot close on its own. SQK requires none of these. Its single reaction-diffusion substrate accounts for gravitational behavior, cosmological expansion, and particle structure without invoking entities that have never been empirically confirmed.

Dissolution of the Unification Problem. The decades-long failure to reconcile GR with quantum mechanics represents one of the deepest unsolved problems in physics. SQK dissolves rather than solves this problem: gravity, electromagnetism, and quantum phenomena are not separate domains requiring a bridge — they each emerge independently from the same underlying reaction-diffusion of subquantum particles. The problem disappears at the substrate level.

Internal Logical Consistency. The Twin Paradox is not a curiosity — it is a symptom of a foundational tension in how Special Relativity handles the symmetry of motion alongside the asymmetry of physical outcomes. SQK's ether medium provides an absolute reference frame that makes time dilation physically real and asymmetric, resolving the paradox without auxiliary argument and without contradicting the theory's own postulates.

Parsimony and Ontological Economy. From an epistemological standpoint, SQK is the more parsimonious framework. It grounds the full range of physical phenomena — gravitational, electromagnetic, quantum — in a single ontological primitive: the reaction and diffusion of subquantum particles. GR, QFT, and their associated auxiliary constructs together constitute a far more complex and fragmented ontological landscape.

While the majority of physicists operate within and believe the mainstream GR-QFT framework — a position supported by its long institutional history and the breadth of its research community — this consensus reflects sociological momentum as much as it does technical superiority. From a purely technical standpoint, the gaps in the mainstream view are not minor: they are structural, longstanding, and unresolved after a century of effort. Physicists who have not yet examined Subquantum Kinetics would benefit from doing so on the merits. Its mechanistic clarity, ontological economy, and internal consistency represent genuine technical advantages that deserve rigorous engagement — not on the basis of belief, but on the basis of reasoned theoretical evaluation.