

On the Equivalence of Special Relativity Time-Slopes and Schrödinger Phase-Gradients

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Subject: New: The time-tag slopes of SR are the phase-shifts of moving wave packets

Using an x-plus-complex-plane 3-space to represent the direction-of-motion subset of the Schrodinger wave function of a moving particle, an observer in the rest frame sees the phase of the wave packet coil to form a helix along the direction of motion relative to that observer. The new insight: This phase coiling is *identical* in cause to the helical time-tag coiling effect that this same rest observer would see in a row of tiny analog clocks placed along the length of a similarly moving spaceship.

That is, the coiling of the Schrödinger phases and the coiling of time stamps shown by the tiny physical clocks are due to the *same* special relativity effect. The extended-box version view of a light clock and its Schrodinger wave-packet representation -- if the clock is small enough and isolated enough to remain uncollapsed -- are the *same*. Despite the enormous computational advantages of e-to-the-i maths for wave functions, the math itself tends to obscure this issue by making itself "feel" more fundamental than it is. For example, as with the row of physical clocks with purely analog phase changes in xyz-space, there are no *fundamental* "imaginary" and "real" distinctions in the physical wave function. It's *always* just phase differences... time-stamp deltas or the hands of the clocks in Feynman's clever QED popular book.

Classical Lorentz disks are pre-collapsed waveforms created by acceleration events that mangle clock topologies and thus *always* collapse wave functions. The exceedingly delicate Lorentz-extended SR topologies -- light-clock boxes in light-cone style Euclidean spacetime -- exist only when the frame that dominates in total mass gives them enough of a leave-me-alone break to *let* them survive.

[Regarding Sir Roger Penrose's idea that gravity is the cause of wave collapse, in this model gravity cannot be] *directly* the cause of wave collapse. It does play a vital but complex role via acceleration, and that role should come more out as folks realize just how fundamental Higgs-induced rest mass is to the nature of time.[1]

I like how this is coming together. SR and quantum are *much* closer than the maths suggest. QM is all about *time shifts*, not just "phase."

[1] Accelerator funding: If the idea of a "low res" universe is terrifying to CERN and company by making it sound like the high energy folks overshot into a domain where nothing more can ever emerge, there is this: What if, in this low-res universe, it turns out that the same folks funding more Higgs research are simultaneously finding out more about the particle *most fundamental both to time and to gravity*? Understanding the Higgs' rest-mass-creating mechanism can only *increase* in importance in a low-res

universe. However, Higgs can never split into those math-noise, math-first "supersymmetry" versions. Instead, once it is understood better -- specifically by refactoring the Standard Model to eliminate all the math noise -- it provides a research path to understand time, gravity, and the broader embedding context of our universe. Big physics *does not die* in a low-res universe, though desktop science plays a far more essential and fundamental role, especially condensed matter physics.