Time Gradients in Schrödinger's Equation

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2022-11-27.21:55 EDT Sun
https://www.youtube.com/watch?v=F5PfjsPdBzg&lc=UgzSfGV3GCMJSzcWhXR4AaABAg

A Comment on the The Science Asylum post:
The REAL source of Gravity might SURPRISE you...
https://youtu.be/F5PfjsPdBzg?t=6m6s

6:06 "How do [point particles] feel a [gravity-inducing] time gradient thingy if they don't have any size?" That's easy: Real-world, non-math particles are never, ever points.

The best you can get in the real world are wave packets that shrink with bizarre ease (think "wave collapse") when overinflated but grow incredibly, and eventually infinitely, difficult to compress when squeezed beyond equilibrium points defined by available energy or the forces of the Standard Model.

Thus when your (delightfully well-explained) time gradients operate on some nominally point-like particle, the only physically meaningful definition of where that particle's mass resides always has a finite diameter on which to operate.

For example, the mass distribution of the single electron in a ground-state hydrogen atom has the same shape as chemistry's "electron cloud" representation of its charge density. For the Stanford Linear Accelerator Center (SLAC) and similar facilities, an electron's mass can be squeezed compactly enough — at a truly astronomical energy cost — to poke quarks inside protons.

One of the saddest omissions in most physics curriculums is the failure to distinguish clearly between the math-only point abstractions used to *calculate* a particle's behavior and the stubbornly finite wave packet that *defines* the highest resolution with which the particle's mass, charge, spin, and other properties can interact with the rest of the universe.

More simply: Even though quantum mechanics informs us starkly, bluntly, and unequivocally that creating even one fully point-like particle would exhaust all of the universe's energy, we prefer to think, meh, points are so pretty that *surely* infinite numbers of them exist anyway.

Naïve math models aside, the more profound and more interesting mystery is this: Why should quantum wave packets respond to time gradients at all, and what does this tell us about the relationship between Schrödinger's equation and General Relativity?

2022-11-27.21.55 EDT Sun
PDF: https://sarxiv.org/apa.2022-11-27.2155.pdf