A Modest Proposal: Wave Collapse is Acceleration

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Sabine, thank you for your refreshing bluntness on how the last half-century of theoretical physics has become largely a paper-production venture.

In such a model, folks too often gain stature not by predicting experimental outcomes or through vigorous self-critiquing, but by persuading others they have special insights into the nature of the universe. In fairness, inspiration-first approaches to understanding the universe have respected pedigrees dating back thousands of years, though earlier versions were called theology.

So let's try something different:

Q: **Why do GR and quantum theory resist merger?**

A: It's a deep-math error: Inertial frames are multi-scale particle (fermion) phenomena with a level of resolution proportional to how many fermions participate in a frame. Mathematical theories that assume the existence of infinitely precise inertial frames, including GR, inevitably produce nonsense when pushed too far beyond the resolution limits imposed by their finite particle sets. By that criterion, GR works fantastically well in areas of comparatively dense matter, and worst in areas of deep void.

Q: **Is wave collapse real?**

A: Sure, it's how you create inertial frames. Collapse always occurs in pairs, since it's the conversion of off-shell quantum states into on-shell momentum pairs that collapses both ends and creates motion. Thus acceleration pretty much is collapse, as long as you pay careful attention to the pairing issue. Exceedingly short-range and short-lived collapse pairs are astronomically common in thermal matter, since every time one atom bumps another the wave functions of both collapse.

Importantly, there is no limit to how different in mass the two members of a collapse pair can be. When one of the two new inertial frames in a pair contains vastly more rest mass than the other we tend to call that one the observer, although in actuality both are always observing (collapsing) each other.

Q: **What is dark matter?**

A: Unresolved, large-volume collapse pairs, of which there are quite a few. The two ends of a collapsed pair need not be simultaneous in space and time, since "simultaneous" is a mostly meaningless word. Every collapse at one location of a Schrödinger wave function creates a bit of momentum -- an inertial frame – that must deposit at some other location to conserve linear momentum. Wave collapse thus is always a binary event, only one end of which contains a quantized particle. The other end usually is extremely faint and thus easy to ignore, especially when deposited in a large piece of classical equipment such as a Stern-Gerlach device or the "unused" arm of a photon interference experiment. However, ignoring the binary nature of Schrodinger wave collapse severely limits our understanding of what measurement and observation is.

When that momentum is not expended immediately you get a fast-expanding volume of entanglement energy, which is an especially cryptic form of momentum. The deep space around galaxies is a good place for such waves to expand into, since they have less matter to collapse. On the other hand, such pairs need a concentration of matter nearby to form in the first place. Put those two together and you get a kind of halo effect.

A more interesting way to say all of this is that 80% of the positive energy of our universe is in the form of a quantum computer that is busy figuring out how the future must to unfold to ensure that all conservation laws are met. Classical reality is, quite literally, the tip of a very large quantum computing iceberg.

Q: **What is dark energy?**

A: Recall the part about how wave collapse is the same as creating momentum pairs? Recall also Feynman's description of rest mass as "momentum in time"? Dark energy is what accelerates and collapses our universe along the time axis. I like to call it the "ereboic" field. It has quanta that, from our embedded-in-time perspective, look like Higgs bosons. Accelerating expansion is the dipole curvature of that field.

Q: **Is there a multiverse?**

A: Nope. Inertial frames are created by groups of particles, and there are only enough particles to create one universe. Even that requires 80% entanglement-energy ("dark matter") overhead.

There is, however, a need for exactly one negative-energy contraverse. As with space-momentum pairs, a time-momentum pair must be just that: a pair. We are entangled with our contraverse, despite its great distance. Our universe and its contra partner collapse each other, making the passage of time meaningful for both. Unlike antimatter, when contra matter hits regular matter, all you get is… well, nothing.

Q: **Is "contraverse" just another name for "antiverse"?**

A: Nope. If it can exist at all, an antiverse would contain an excess of positive-energy fermions, that is, of the weak-force-aware chiralities of antimatter. A contraverse is an exact CPT-symmetric version of our universe and has an excess of what we think of as weak-blind antimatter chiralities. Those chiralities are weak-blind only when seen here. They see their contra version of the weak force quite well when moving in contratime.

Q: **Seriously, did you just redefine half the chiral fermions in the Standard Model as having negative energy?**

A: Sure. That's also how time works and why you cannot separate the fermions from the bottom-up construction of space-time. It's impossible to simplify the internal structure of the Standard Model without realizing that the Higgs mechanism is just a cumbersome, backward-in-time way of invoking short-lived negative-energy fermions.

Q: **Didn't you just try to "persuade others you have special insights into the nature of the universe"?**

A: Hah! My expertise is more in effective analysis strategies, based in part on machine learning techniques. My sincere recommendation is that you ignore everything I just said, even though it's probably right.

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