On Roger Penrose's Even-Handed Marriage of General Relativity and Quantum Mechanics

Terry Bollinger
2023-08-15.10:16 EDT Tue
https://www.instagram.com/p/Cv8ort-Ptcc/c/17977246691390618/

A Comment on the Closer To Truth (Instagram) post:
Explore quantum theory with physicist and mathematician Sir Roger Penrose (Aug 14, 2023)
https://www.instagram.com/reel/Cv8ort-Ptcc/?igshid=MzRlODBiNWFlZA==

> Robert Lawrence Kuhn: *"We're going to have to change General Relativity because quantum mechanics is more fundamental. Do you agree with that?"*
>
> Sir Roger Penrose: *"People say [that since] there's no known contradiction between quantum mechanics and observed facts, [but] when you take into account … Einstein's cosmological constant Lambda … we [also] don't have any known conflict between general relativity and observed facts. So, it's one or the other. Well, I say it's not really one or the other. It's an even-handed marriage between one and the other."*

Thank you, Sir Roger Penrose and Robert Lawrence Kuhn, for a beautiful defense of General Relativity!

Here's a related thought: What if quantum mechanics is nothing more than the tattered, ratty, low-resolution fringe of that most astonishing and profoundly impactful of all constructs in the natural world, that being the set of rules and behaviors we so causally, and often dismissively, call "classical physics?"

That is, instead of deifying the fuzziness of the quantum world by mathematically redefining it as sums of inaccessible infinities of exceedingly classical-like data storage, what if the deepest, most profound, and most complex relationship in the universe is its ability — always locally and inevitably somewhat approximately — to redefine its dynamics in terms of the marvelously simple, yet simultaneously unfathomably complex, operators that we so casually refer to as *x*, *y*, *z*, and (drumroll!) *t*?

It is this *xyzt* approximation, rather than its ratty lower edge of quantum uncertainty, that makes persistence, information, and history possible. From these properties, you get the simple, reliable, predictable rules of physics, math, and chemistry that make life and this discussion possible.

The bottom line is that I don't think we're even looking at this the right way. If you instead view our universe as a bubbling froth of finite mass, finite-boundary, constantly-interacting, multi-scale *xyzt* inertial frame instances, bound by causality and the rules of special relativity, then quantum mechanics and General Relativity become lower and upper boundaries at which the amazingly effective *xyzt* classical approximation becomes unsustainable, and the much stranger physics of the pre-*xyzt* deep universe begins to show through (FIG. 1).

It is in that deeper pre-classical, pre-*xyzt* universe that the more profound unification of quantum mechanics and General Relativity resides — and that makes it challenging since our brains are hardwired to take maximum advantage of the *xyzt* classical approximation.

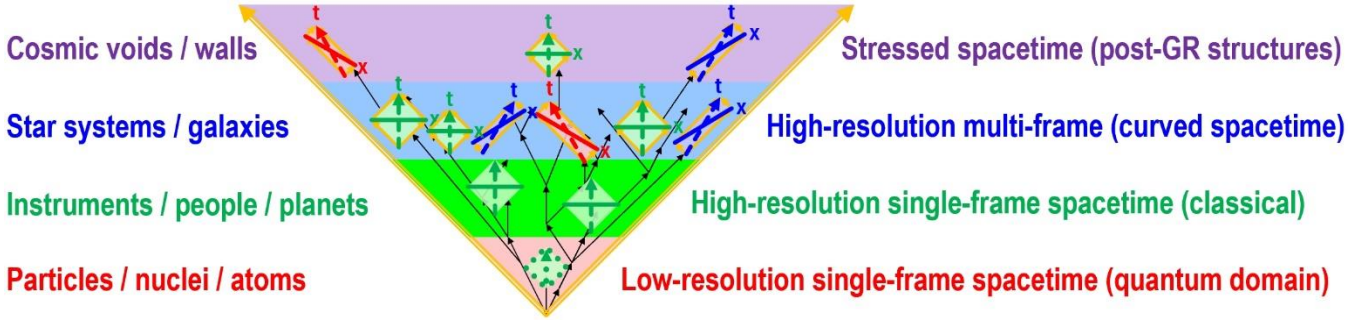

FIG. 1. The Spacetime Resolution Hierarchy.