Quantum Mechanics Is No More Fundamental Than Classical Mechanics

Terry Bollinger
2023-06-01.23:41 EDT Thu
https://youtu.be/O8Ph5sfpkbs&lc=UgwjtLi5ljy4wwhsimZ4AaABAg

Part 2 of 2 of a Comment on the Dr Ben Miles YouTube post:
Why Can't We Travel Faster Than Light? (Jun 1, 2023)
https://youtu.be/O8Ph5sfpkbs

Regarding going faster than light using quantum mechanics, I remember that tunneling issue from Sabine's video. I believe I both commented on it and emailed her directly.

The correct resolution is oddly simple: While the tunneling is, indeed, "instantaneous" (wow, that word *so* oversimplifies it), the spread of the Schrödinger wave that enables the tunning is bound by the speed of light. Without that wavefront first passing by, there is no tunneling and, thus, no dissemination of information faster than lightspeed. Any mathematical analysis more complicated than that is mostly noise.

In other words, you can't send information faster than the speed of light, not because tunneling is too slow, but because the Schrödinger wave expansion is too slow.

Finite Schrödinger wave expansion brings up another rather critical issue, which is that quantum mechanics is *no more fundamental than classical mechanics,* or for that matter, special relativity. All three are pieces of a single fabric, all three are emergent, and all three have limitations.

The critical limitation in the case of quantum mechanics is the non-existence of Hilbert space… which, unfortunately, is also the foundation of most modern quantum mechanics.

Hilbert space simplifies quantum states by assuming they are preexisting and infinitely precise. That's nonsense since nothing in the physical world works that way. Schrödinger waves are laboratory phenomena, and all observations of them, including in commercially available quantum encryption devices, require them to start at a precise location in classical space and then spread at no faster than the speed of light. That critical limitation time-spread limitation *cannot* be adequately represented using only a Hilbert space.

Thus, laboratory-consistent Schrödinger waves are never infinite in scope and always require a finite time to traverse space and become "more" perfect. That is the core of why quantum mechanics cannot be the deeper infrastructure of the universe.

More later, maybe, I must leave for the airport early tomorrow.