

## Wave Functions of the Universe are Just Dumb Math Errors

Terry Bollinger

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YouTube: [https://www.youtube.com/watch?v=LJzKLTavk-w&lc=UgzJCiT1ilgqEw26FpV4AaABAq.9b\\_3i1GAq1v9b\\_BqEg07L7](https://www.youtube.com/watch?v=LJzKLTavk-w&lc=UgzJCiT1ilgqEw26FpV4AaABAq.9b_3i1GAq1v9b_BqEg07L7)

Patreon: <https://www.patreon.com/posts/chaos-real-with-66776672>

*Comment on YouTube Sabine Hossenfelder post:  
Chaos: The real problem with quantum mechanics  
<https://youtu.be/LJzKLTavk-w>*

Steve Zara (YouTube): This is a rare video that actually shocked me. If quantum mechanics has a problem with a moon, how can some physicists talk of the "the wave function of the universe"?

Terry Bollinger: They cannot. All variants of universal wave functions include the mathematical concept of splicing together two or more functions "piecemeal." This enables them to model locality in a way that is infinitely differentiable and thus compatible with the infinite-precision continuum school of mathematics.

There are two problems with this. The first is that one side of the splice always goes to infinity, which requires infinite computational capacity even if it looks smooth to human eyes. The second is that this kind of smoothness is incompatible with how the light cones of quantum events operate in the real world. These cones create finite edges that limit both the smoothness and the maximum details of expanding wave functions before they grow large enough to merge with all of the other wave functions in the universe.

Everett's many-worlds idea is the least plausible and most egregious example of this kind of impossible-smoothness thinking since it assumes a universal wave function that, due to light-cone limits, cannot exist in the physical world.

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<http://sarxiv.org/apa.2022-05-28.1006.pdf>