On the Impossibility of Bohr's Perfect Waves

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2022-05-28.09:18 EDT Sat
YouTube: https://www.youtube.com/watch?v=LJzKLTavk-w&lc=UgwGahDF1UuhptxZjBp4AaABAg
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

From Sabine Hossenfelder's video: "… physicists [say] measurement is not a physical process [but] just accounting for the knowledge we have gained. And there's nothing propagating faster than light if we just update our knowledge about another place."

Great video! Regarding your final point, the non-physical version of Schrödinger wave functions exists only in Bohr's abstract Copenhagen interpretation. Bohr extrapolated data trends to assert that a quantum entity must behave either as a "pure" wave -- which makes it non-physical and zero-energy; or as a "pure" particle -- which makes it infinitely tiny, infinitely dense, infinitely energetic, and infinitely classical.

(And then we ponder why our math is plagued by infinities?)

Neither of these Bohr extrema exist in lab results, since both are forbidden by the Planck relationship. In the absence of infinite purity we are left with the much grubbier, "a little of both" wave functions that always impart at least an incredibly tiny smidge of particle-like momentum when they collapse.

That's the only mathematically self-consistent explanation for why solar sails work. As each outbound photon wave is partially "reduced" or "detected" by the narrowing of its propagation cone when it reflects from the sail, it deposits an insanely tiny bit of particle-like momentum on that sail. This deposit is so tiny that it has no detectable impact on the _energy_ of the reflected photon.

The momentum deposit is very much detectable, however, since large numbers of photons can deposit enough momentum in the sail to accelerate it to a large fraction of the speed of light. This same class of literally astronomically common single-photon wave reductions is also what keeps objects like Hyperion very, very classical.

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https://sarxiv.org/apa.2022-05-28.0918.pdf