

How Linear Momentum Links Quantum Mechanics and Relativity

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YouTube: <https://www.youtube.com/watch?v=LJzKLTavk-w&lc=UgwIPH5R-oiNan8PgnB4AaABAg>

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>*

Thanks. I need to look at QBism again, especially since my perspectives have changed since the last time I looked.

I agree fully that the eigenstate representations are incredibly powerful. However, due to their inclusion of non-physical mathematical extrema they are also unlikely to be the most efficient computational models possible.

The biggest problem with always-both Schrödinger (and photon) waves is they are flatly incompatible with the point-particles-only approach of QED. Light sails are a superb example. Anyone who thinks they can model a light sail using QED needs to examine what they are saying very carefully, because I assure you it will turn out to be wave-a-magic-wand nonsense.

To be self-consistent, the always-both version of Schrödinger wave must expand the interface between the quantum and classical domains to include object-level absorption of momentum from quantum-scale particles. Both sides must be treated as equal partners in the momentum exchange, no matter how vastly they differ in scale, with one photon bouncing off of a solar sail again being an example. This momentum absorption is a distinct and separate event from energy absorption, since the latter, when it occurs, is fully quantized at the particle level and never at the object level.

My name for object-scale absorption of particle momentum is Marman absorption, since it was in a delightful conversation with Doug Marman that I first made realized no other model fits the well-verified data set on this issue. That data set that goes back about a century to the first rigorous tests of Maxwell's radiation pressure prediction. Alas, and to me bizarrely, all of this is incompatible with QED. (Sorry Richard!)

In addition to providing a self-consistent quantum explanation for the literally astronomically large set of data on stellar and galactic dust movement, Marman absorption also provides an intriguing bridge to relativity. That's because it is equivalent to saying the inertial frame of an object absorbs quantum-scale momentum and is accelerated by it.

This makes Marman absorption a bridge between quantum mechanics, special relativity, and, by hierarchical construction of quantum-synchronized inertial frames across vast scales of space, general relativity.

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