Review of: "Foundations of Quantum Mechanics Revealed by the Conservation Laws"

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Potential competing interests: No potential competing interests to declare.

Author touched the problem verbalized by Murray Gell-Mann in his lecture at the 1976 Nobel Conference: “Niels Bohr brainwashed the whole generation of theorists into thinking that the job (of finding an interpretation of quantum mechanics) was done 50 years ago”.

I prefer the opinion by Sabine Hossenfelder (2019) : “Let us then look at an actual problem, that is, that we don’t know how a measurement happens in quantum mechanics. The discussion of this problem today happens largely among philosophers; physicists pay pretty much no attention to it. Why not, you ask? Because they have been told as students that the problem doesn’t exist.”

One could include an additional argument because this problem is out of the “food chain.”

The problem obviously exists; a light at the end of the tunnel is due to authors like Richard Oldani.

Now the critical part. The author is afraid to leave the closed loop: “particle-wave duality.”

He states, e.g., *“in contrast to the Hamiltonian model, a physical separation does exist between the (1) matter and (2) energy of an excited state due to (3) field boundaries. An (4) electron does not absorb energy when it is excited; rather, excitation causes (3) field boundaries to be erected that localize energy within the atom and create a “bound” (5) photon.”*

I recommend the main change: there is no separation between the matter and energy. Instead of five terms used in the preceding sentence, the author should accent the fact that **everything**, including quarks, is a wave. The wave energy obeys the Einstein relation: $E = mc^2$, and the well-defined, sharp boundaries… do not exist, etc.

An academic example below demonstrates the necessity of very careful analysis:

“The measurement(s) of the momentum and energy of the ocean wave when only different ocean waves are available for an observer.”

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