Review of: "Reply to Comment on “Neutrino Oscillations Originate from Virtual Excitation of Z Bosons” and “Neutrinos Produced from β Decays of Neutrons Cannot Be in Coherent Superpositions of Different Mass Eigenstates”"

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I have read both the original papers by the author (arxiv:240700954, arxiv:2410.03133) and the comment by Cline (arxiv:2410.05826), and I agree with the latter. In particular, my criticism regards lemma 2 in arxiv:2410.03133. In this paper, the author tries to disprove that in neutron decay (anti)neutrinos can oscillate (of course, the same can apply to all kinds of processes with neutrinos in the final state). The author claims that in the case of overlapping, measuring **exactly** the momenta of the proton, electron, and neutrino, the mass of the neutrino must be determined by the mass-energy relation. But due to uncertainty relations, this measurement requires an infinite amount of space (or equivalently, an infinite time for measurement). In neutron decay, the neutrino is emitted as a superposition of wavepackets of the three mass eigenstates, which travel with different velocities. The spatial interference of these wavepackets determines the oscillations, but eventually, they separate, and the oscillation coherence is lost (the oscillating terms are damped). In a sense, the neutrino state, although still in a pure state, behaves like a mixed state. As stated before, a precise measure of the particle momentum (it is sufficient to measure the proton and the electron momenta, since the neutrino state is entangled with the electron and proton states) requires a long (virtually infinite) time. After this measurement, the global state collapses into a mixed state, and one neutrino mass is selected. But as said before, we cannot distinguish between the loss of coherence due to wavepacket separation and the destruction of quantum coherence due to momentum measurement. For this reason, I agree with the second part of the lemma but not with the first. In addition to this, I agree with Cline that the interaction Lagrangian (4) in arxiv:240700954 is wrong since the Z boson interaction is flavor-blind in the standard model. For this reason, in my opinion, the paper must be rejected.