

[No place to upload a cover letter for *Quantum Studies*! Cut and pasted into a “Comments” box to be sent to “the publication office.”]

July 16, 2024

Dear Editors:

While this manuscript goes into the mathematical foundations of quantum mechanics, the core new idea is to look for physical justification of the mathematical structure, not simply internal mathematical consistency. In prior submissions to other journals, the reviewers focused on technical aspects without consideration for the physical significance. To quote one reviewer, “The question of whether the limiting states are actually physical or merely idealisations is rather pointless.” It is well known in many fields that having tools that are better suited to a job makes the job both more efficient and safer. And to make an analogy to the hierarchy of controls in workplace safety, engineering controls are always preferred to administrative controls, e.g. it is much safer to build a fence than merely to post a sign saying “Beware of open ledge.” In the classical realm, we often have strong intuition to aid us in eliminating unphysical solutions that may be mathematically allowed—not even high school students propose negative mass solutions to F=ma in which the body accelerates in the opposite direction of the force. In the quantum realm, such intuition is generally less reliable, and the better “engineering controls” that our mathematical structures provide us, the safer we will be from mistakenly including unphysical solutions.

We hope that the focus of *Quantum Studies* aligns with our aim to have a mathematical foundation for quantum mechanics that is more physically grounded and motivated. We recommend referees working in theoretical quantum physics who have close connections to phenomenology and experiment, or experimentalists with a strong mathematical background and interest in foundational aspects of quantum theory.

Sincerely,



Christine A. Aidala  
 Professor of Physics  
 University of Michigan