

Review of: "Quaternion Quantum Mechanics: The Baryons, Quarks, and Their q-Potentials"

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Potential competing interests: No potential competing interests to declare.

The title of the article clearly indicates the focus of the article on quaternion quantum mechanics and its application to the study of baryons and quarks, which sets the reader's expectations for the content of the paper.

The abstract introduces the Planck-Kleinert crystal concept, which suggests the use of quaternion algebra in describing the behavior of particles within an ideal elastic continuum. This concept is intriguing and suggests a novel approach to understanding particle physics.

Main Findings: This study involves constructing second-order partial differential equation systems (PDES) for the proton, electron, and neutron based on quaternion propagators. These equations are said to generate PDES for the up (u) and down (d) quarks and demonstrate compliance with experimental findings regarding proton and neutron structure. The abstract claims to provide explanations for the observed behaviors of particles, such as the stability of certain particles and the phenomenon of quark chains, addressing a known paradox in particle physics.

The manuscript contains a plethora of general information and topics, leading me to perceive it as more of a review paper than a conventional research article. Even if intended as a review paper, the authors should consider condensing the highlighted topics into a more concise version. I would suggest the authors add some more references to recent works and discuss the current trends going on in this field.

Additionally, there are noticeable errors throughout the manuscript. For instance, in section 2.3, Table 1 displays "charg" as the third row heading, indicating the need for careful proofreading and quality improvement. At the end, it is unexpected to encounter abbreviations presented in TABLE format, resembling content directly lifted from a textbook, which is not deemed acceptable practice. In scientific papers, such abbreviations are typically integrated into the text rather than presented separately.

Hence, I would strongly advise the authors to meticulously review and revise their work to rectify these issues before submission for publication.