Review of Quaternion Differential Equations: Historical Development, Applications, and Future Direction

ABSTRACT

Quaternion is a four-dimensional and an extension of the complex number system. It is often viewed from various fields, such as analysis, algebra, and geometry. Several applications of quaternions are related to an object's rotation and motion in three-dimensional space in the form of a differential equation. In this paper, we do a systematic literature review on the development of quaternion differential equations. We utilize PRISMA (preferred reporting items for systematic review and meta-analyses) framework in the review process as well as content analysis. The expected result is a state-of-the-art and the gap of concepts or problems that still need to develop or answer. It was concluded that there are still some opportunities to develop a quaternion differential equation using a quaternion function domain.