

Representation of gravi-electromagnetism using matrix algebra

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The vector, matrix and tensor algebras are frequently used in order to formulate many physical systems and engineering problems [1]. The nature of quantum mechanics, which is one of the significant areas of physics, has increased the importance of matrix algebra due to including non-commutative structures. Therefore, matrix algebra satisfies the great contributions and developments. In this study, after defining matrix definitions of quaternion algebra [2, 3], which is one of the member of higher dimensional algebra, both electromagnetism and linear gravity [4, 5, 6] are combined by using matrix representation with dual [7] and complex [8] units. By this way, we have firstly showed the isomorphism and similarity between quaternion and matrix algebras for gravi-electromagnetism [9, 10].

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