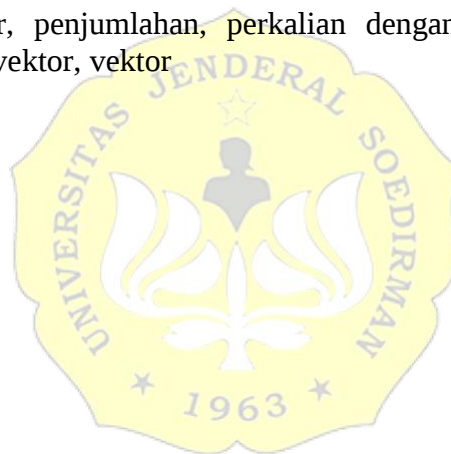


ABSTRAK

Skripsi ini membahas mengenai ruang multivektor $\mathbb{G}^2$ dan $\mathbb{G}^3$. Ruang $\mathbb{G}^2$ adalah ruang dengan anggota multivektor yang berbentuk penjumlahan dari skalar di $\mathbb{R}$, vektor di $\mathbb{R}^2$, dan bivektor di $\mathbb{R}^2$. Sementara itu, ruang $\mathbb{G}^3$ adalah ruang dengan anggota multivektor yang berbentuk penjumlahan dari skalar di $\mathbb{R}$, vektor di $\mathbb{R}^3$, bivektor di $\mathbb{R}^3$ dan trivektor di $\mathbb{R}^3$. Operasi penjumlahan dan perkalian terhadap skalar berlaku di ruang multivektor $\mathbb{G}^2$ dan $\mathbb{G}^3$. Di kedua ruang tersebut, operasi penjumlahan bersifat tertutup, asosiatif, komutatif, mempunyai elemen identitas, mempunyai invers. Selanjutnya, operasi perkalian multivektor dengan skalar bersifat asosiatif, distributif kiri dan distributif kanan, serta terdapat skalar 1 yang merupakan unsur identitas perkalian. Dengan demikian, ruang multivektor $\mathbb{G}^2$ dan $\mathbb{G}^3$ yang dilengkapi dengan operasi penjumlahan dan perkalian dengan skalar merupakan ruang multivektor.

Kata kunci: bivektor, penjumlahan, perkalian dengan skalar, ruang vektor, multivektor, skalar, trivektor, vektor



ABSTRACT

This research discusses the multivector space $\mathbb{G}^2$ and $\mathbb{G}^3$. The space $\mathbb{G}^2$ is a space containing multivectors in the form of the sum of the scalars in $\mathbb{R}$, the vectors in $\mathbb{R}^2$, and the bivectors in $\mathbb{R}^2$. Meanwhile, the space $\mathbb{G}^3$ is a space containing multivector members in the form of sum of the scalars in $\mathbb{R}$, vectors in $\mathbb{R}^3$, bivectors in $\mathbb{R}^3$, and trivectors in $\mathbb{R}^3$. The addition and multiplication operations on scalars are valid in the multivector spaces $\mathbb{G}^2$ and $\mathbb{G}^3$. In each space, the addition operation is closed, associative, commutative, has an identity element, and an inverse. Furthermore, multivector multiplication operation with scalars in each space satisfies associative, left distributive and right distributive properties, and there is a scalar 1 which is an element of the multiplication identity. Thus, the multivector spaces $\mathbb{G}^2$ and $\mathbb{G}^3$ equipped with addition and multiplication operations with scalars are multivector spaces.

Keywords: addition, bivector, multiplication by scalar, multivector, scalar, trivector, vector, vector space

