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Farrukh Mukhamedov
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VOLUME 1

$$x' = 2xy$$
$$y' = 2xz$$

INVESTIGATIONS ON PURE MATHEMATICS, FINANCE MATHEMATICS AND OPTICS

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$$\varphi_1(x, y, z) = z$$

$$z' = x^2 + y^2 + z^2 + 2yz$$

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ON ASSOCIATIVE ALGEBRAIC STRUCTURE OF GENETIC INHERITANCE

Masyfu'ah Mokhtar
Prof. Dr. Nasir Ganikhodjaev

Abstract. *The associative algebraic structure of genetic inheritance, have been proven by Hisamuddin (2005) which restricted to the case number of allele, n=2 only for volterra and non-volterra QSO. Then the case have been expended to the case n=3 and n=4 by Mansur. However, Mansur only discussed on the volterra operators for n=3 and 4, and partially discuss non-volterra operator for both cases. Thus, in this paper, we proceed in discussing the volterra QSO to the case n=5, and correcting a partial non-volterra QSO which have been defined by Mansur. We use the same method by using N.Ganikhadjaev's construction of QSO. By studying the pattern of volterra QSO resulted from the case range n=2 up to n=5, we discover a very interesting behaviour which proof the Theorem 3 stated by Mansur. Some non-volterra QSO also have been resulted for n=3 up to n=5. However, it is not completely studied and it is prepared for further investigations.*

1 Introduction

This paper is prepared to show the existence of associative genetic algebras. Hisamudin (2005) have proof the associative genetic algebra with restriction to the number of allele, $n = 2$ only, by using the Quadratic Stochastic Operator. While Mansur(2006) have show the existence of associative genetic algebra for higher number of allele, $n = 3$ and $n = 4$. However, she only manages to show for volterra case and partially discuss for non-volterra case. Now, the considered number of alleles is continued to $n = 5$ and the results supported to the proving of Theorem 3, proposed by Mansur (2006).

This paper discuss on a larger number of allele for Volterra QSO and proving Theorem 3 related to the number of operator which will be resulted from volterra case. However, there is no any theory which can be applied for Non-Volterra QSO. Thus, this paper is significance in contributing some basic ideas in exploring the general theory for Non-Volterra QSO in future.

2 Data and research methodology

2.1 Simple Mendelian inheritance

We consider simple Mendelian inheritance for a single gene with two alleles A and a. In this case, two gametes fusing (or reproducing) to form zygote.

Table 2.1: Alleles passing from gametes to zygotes

	A	A
A	AA	Aa
a	aA	Aa

The rules of simple Mendelian inheritance indicate that the next generation will inherit either A or a with equal frequency $1/2$.Therefore, when 2 gametes reproduce, a multiplication is