Ph.D.Thesis of Salahaddin University-Erbil academic staff Studied Abroad

Title of thesis: M-Axial Algebras Related to 4-Transposition Groups

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Summary(Abstract):

The main result of this thesis concerns the classification of 3-generated M-axial algebras A such that every 2-generated subalgebra of A is a Sakuma algebra of type NX, where N∈{2, 3, 4} and X∈{A, B, C}. This goal requires the classification of all groups G which are quotients of the groups $T^{(s1, s2, s3)} = < x, y, z \mid x^2, y^2, z^2, (xy)^{s1}, (xz)^{s2}, (yz)^{s3} >$ for $s_1, s_2, s_3 \in \{3, 4\}$ and the set of all conjugates of x, y and z satisfies the 4-transposition condition. We show that those groups are quotients of eight groups. We show which of these eight groups can be generated by Miyamoto involutions. This can be done by classifying all possible M-axial algebras for them. In addition, we discuss the embedding of Fisher spaces into a vector space over GF(2) in Chapter 3.

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