# Research Title:
**On the Symmetric Genus of K-metacyclic Group and Its Presentations**

## Abstract:
The symmetric genus of a finite group $G$ is defined as the smallest genus $\sigma$ of a compact connected oriented surface on which $G$ acts faithfully via diffeomorphisms, which may be orientation-preserving or orientation-preserving. In this paper we determine a useful lower bound for the symmetric genus of any finite group with a cyclic quotient group. We examined the lower bound for the family of K-metacyclic groups and then determined the symmetric genus of each non-Abelian subgroup of a K-metacyclic group. We also provide some examples of groups for which the lower bound is attained and then used the standard presentation of a finite group as a quotient of a Non-Euclidean Crystallographic (NEC) group by a Fuchsian surface group.

## Impact Factor:

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G. N. Shuaibu, B. A. Modu and D. Samaila

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**Research Title:** Construction of Character Table of \( S_6 \) Using Permutation Module and Semi Standard Young Tableaux.

**Abstract:**
In this paper, we construct the irreducible character table for symmetric group \( S_6 \) following the same procedure used by Rao and Shankar (2016), in constructing irreducible character of \( S_5 \) i.e using the permutation module and the semi-standard young tableaux.

**Impact Factor:**

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S. G. Ngulde\(^1\), F. B. Ladan\(^2\) and M. M. Karagama\(^3\)

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The notion of group representation is fundamental in mathematics. The idea is to study different ways for which groups can act on any vector space by linear transformation. This paper only focused on finitely generated groups, representations and decompositions. As it is well known by various authors that the problems of decomposing matrix algebras and of matrix representations of finitely generated groups are closely related, our research is limited to matrix representations. Following the formal reductions between these two computational problems, we obtain an efficient algorithm for the problem of deciding whether a given matrix representation is completely reducible. Also for computation of isotypic components of any completely reducible matrix representation, and of a set of irreducible components of any completely reducible representation over the complex field $\mathbb{C}$ and the real line $\mathbb{R}$. The problems we examined use input (elements) from an arbitrary field $F$, and produce output (elements) of this field. For an algorithm for such a problem, the arithmetic complexity is independent of both the representation of the field elements and the implementation of the field arithmetic.

**Impact Factor:**

Researchers Name(s):-

(Lead Researcher First)

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<tr>
<th>Research Title:</th>
<th>THE STRUCTURE OF THE PERMUTATION MODULES FOR TRANSITIVE ABELIAN GROUPS FOR PRIME-POWER-ORDER</th>
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<tr>
<td>Abstract:</td>
<td>In this paper, we gave the well-known classification of transitive abelian groups of prime-power order before analyzing the structure of their permutation modules over fields of characteristic p. For a given prime number p, we have analysed the structure of the permutation module on characteristic p associated with transitive abelian p-groups of degree ( p^m ) (( m \geq 1 )).</td>
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<tr>
<td>Researchers Name(s):</td>
<td>Mohammed A., Ngulde, S.G. &amp; Mandara A.V.</td>
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<td>Correspondance Address:</td>
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| Source of Publication: | Journal of Physical Science and Innovation  
ISSN: 2277-0119  
Volume 8, No. 1, 2016 |
| Year of Publication: | 2016                                                                                     |
| Source of Funding and Amount | # 36000                                                                                  |
Research Title: **ON FINITE GROUP PRESENTATIONS AND FUNCTION DECOMPOSITION BASED ON LINEARITY OF DISCRETE TIME SIGNAL**

Abstract: Based on the concept of group representation theory, new representations can be generated by direct product (or tensor product) of any two representations of a group. In such case, their irreducible representations are also direct product. But the conditions under which these representations can be chosen and how to decompose them is silent. In this work, a clear and efficient method for generating and decomposing representations is presented. The study is restricted to the geometric group D_{2n} of order 2n and its subgroups, where a new homomorphism called a transfer function based on the geometric group is constructed. Due to linearity of discrete-time signal, the generated transformations are used on signal space. Thus, a different approach to signal processing with the choice of a group of transformations is established.

Impact Factor: 

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Source of Publication: 

Year of Publication:

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**Research Title:**

On Hamiltonian Path and Circuits in Non-Abelian Finite Groups

**Abstract:**

The main objective of this paper is to determine the non-Abelian finite groups which contain only Abelian and Hamiltonian subgroups and to obtain some of their fundamental properties. Two exceptional groups of orders 16 and 24 were examined and are completely determined using GAP. These were achieved from the fact that if a group G contains at least one Hamiltonian subgroup and if all its subgroups are Abelian or Hamiltonian, then the group itself is Hamiltonian. We finally generate some Hamiltonian circuits in the two non-Abelian groups and then present a method of finding the number of circuits in any finite group.

**Impact Factor:**

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<td>Abstract:-</td>
<td>In the present paper, the boundary layer flow of incompressible fluid over a stretching plate has been considered. Then, shooting method is used to convert boundary value problem into an initial value problem. The popular Runge-Kutta method is then employed to solve the problem that was converted to IVP. This is done because most real life problem depends on IVP.</td>
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<td>Researchers Name(s):-</td>
<td>Mohammed Abdullahi, Abba V. Mandara, Shuaibu G. Ngulde , Bassi I. G.</td>
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<td>Year of Publication:-</td>
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