

Bilal Ahmad Kalas

Profile

M.Sc. Mathematics graduate specializing in abstract algebra. My master's dissertation investigated finite transformation semigroups, providing research experience in semigroup theory and finite algebraic structures. I am seeking doctoral research in pure mathematics, with primary interests in algebra and its structural aspects, while remaining broadly interested in the interactions between algebra, geometry, topology, and number theory.

Education

2019–2024 **Integrated B.Sc-M.Sc Mathematics**, Central University of Kashmir, Jammu & Kashmir, India

Master's Dissertation

Title *Ranks and Presentations for Finite Transformation Semigroups*
Supervisor Dr. Aftab Hussain Shah, Associate Professor
Link [thesis.pdf](#)

- Studied rank and presentation problems for finite order-preserving transformation semigroups.
- Based on the work of Joerg Koppitz and Somnuek Worawiset on transformations with one fixed point.
- Focused on semigroup presentations, generating sets, ranks, and structural & combinatorial properties of finite transformation semigroups.
- JavaScript and Python implementation for computing cardinality and rank of order-preserving finite transformation semigroups with one fixed point.
- JavaScript implementation for deriving presentations of order-preserving finite transformation semigroups with 1 as the only fixed point.
- Strengthened my ability to independently study research literature, develop rigorous mathematical arguments, and communicate advanced mathematical ideas through regular research presentations.

Research Interests

Algebra, Commutative Algebra, Semigroup Theory, Topology, Algebraic Geometry, Number Theory, Representation Theory, Galois Theory, Algebraic Topology, Algebraic Number Theory, Combinatorics

Teaching Experience

2024–2025 **Private Mathematics Tutor**

Skills

Relevant Coursework	Abstract Algebra, Commutative Algebra, Field and Galois Theory, Topology, Algebraic Topology, Number Theory, Linear Algebra, Differential Geometry, Measure Theory, Semigroup Theory, Functional Analysis, Graph Theory
Academic Skills	Mathematical proof writing, mathematical exposition, independent study, reading and analysis of mathematical literature
Technical Skills	L ^A T _E X, Python, HTML/CSS, JavaScript, C

Languages

Hindi/Urdu	Native
Gojri	Native
Kashmiri	Native
English	Fluent

References

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