Brawijaya International Conference on Mathematics

May 1, 2027 - May 3, 2027

Scientific Program

The conference will include (but is not limited to) the following tracks:

Pure Mathematics

This track group covers fundamental research in pure mathematics, emphasizing theoretical developments, mathematical structures, rigorous analysis, and the advancement of mathematical knowledge. It welcomes original contributions addressing classical and contemporary problems across the major branches of pure mathematics.

Areas of interest include mathematical analysis, algebra, geometry and topology, number theory, mathematical logic, and foundations of mathematics. Contributions presenting new theorems, proofs, methods, and theoretical insights are particularly encouraged.

Analysis

This track welcomes original research in mathematical analysis, including real and complex analysis, functional analysis, harmonic analysis, operator theory, approximation theory, and related analytical methods. Contributions addressing theoretical developments, analytical techniques, and their connections to other mathematical disciplines are encouraged.

Algebra

This track focuses on theoretical and computational developments in algebra, including group theory, ring theory, field theory, module theory, linear algebra, representation theory, noncommutative algebra, and algebraic structures. Research exploring algebraic methods and their applications to other areas of mathematics is welcome.

Geometry and Topology

This track covers research in differential geometry, algebraic geometry, geometric analysis, general topology, algebraic topology, and geometric structures. Contributions investigating geometric and topological properties, invariants, transformations, and relationships with other mathematical fields are encouraged.

Number Theory

This track welcomes theoretical and computational contributions in elementary, analytic, algebraic, and computational number theory. Topics include prime numbers, Diophantine equations, modular forms, arithmetic geometry, integer sequences, and related problems involving the properties and structures of numbers.

Logic and Foundations

This track focuses on mathematical logic and the foundations of mathematics, including set theory, model theory, proof theory, computability theory, formal systems, and foundational questions. Contributions examining logical structures, mathematical reasoning, formal verification, and the theoretical foundations of mathematical methods are welcome.

Applied Mathematics

This track group focuses on the development and application of mathematical theories, models, and computational methods to address scientific, engineering, technological, industrial, and societal challenges.

It welcomes theoretical, numerical, computational, and interdisciplinary contributions in differential equations, scientific computing, optimization, operations research, mathematical

physics, data science, artificial intelligence, and industrial mathematics. Research that bridges mathematical theory with real-world applications is particularly encouraged.

Differential Equations

This track welcomes theoretical, analytical, and computational research on ordinary differential equations, partial differential equations, fractional differential equations, functional differential equations, and dynamical systems. Contributions addressing existence, uniqueness, stability, qualitative behavior, numerical solutions, and mathematical modeling of real-world phenomena are encouraged.

Numerical Analysis and Scientific Computing

This track focuses on the development, analysis, and implementation of numerical methods and computational algorithms for mathematical and scientific problems. Topics include numerical linear algebra, numerical solutions of differential equations, approximation methods, computational mathematics, high-performance computing, error analysis, and scientific simulation.

Optimization and Operations Research

This track welcomes research in mathematical optimization, operations research, and decision-making methodologies. Topics include linear and nonlinear programming, convex and nonconvex optimization, integer and combinatorial optimization, multiobjective optimization, optimal control, scheduling, network optimization, and mathematical methods for resource allocation and decision support.

Mathematical Physics

This track focuses on mathematical theories, models, and methods arising in physics and related sciences. Areas of interest include mathematical methods in quantum mechanics, classical and continuum mechanics, statistical mechanics, wave propagation, fluid dynamics, mathematical models of physical systems, and analytical or computational investigations of physical phenomena.

Data Science and AI

This track welcomes research on the mathematical foundations, computational methods, and applications of data science and artificial intelligence. Topics include machine learning, deep learning, mathematical optimization for AI, statistical learning, computational intelligence, data analytics, pattern recognition, and mathematical modeling of data-driven systems. Contributions emphasizing mathematical rigor, methodological innovation, and interdisciplinary applications are encouraged.

Interdisciplinary and Industrial Mathematics

This track promotes research applying mathematical theories and computational techniques to interdisciplinary and industrial challenges. Topics include mathematical modeling in engineering, biology, medicine, economics, finance, environmental science, manufacturing, logistics, and technological systems. Contributions demonstrating innovative mathematical solutions to practical problems and collaborations between mathematics and other disciplines are particularly encouraged.

Probability and Statistics

This track group welcomes original research in probability theory, statistics, stochastic modeling, and their applications across mathematics, science, engineering, economics, and related disciplines.

Topics include probability distributions, stochastic processes, statistical inference, Bayesian methods, statistical modeling, computational statistics, time series analysis, and modern statistical methodologies. Contributions developing new theoretical results, computational techniques, and practical applications are encouraged.