Commentary
Volume 12:S5, 2021

Journal of Physical Mathematics

ISSN: 2090-0902 Open Access

The Fundamental Objects of Study in Physical Mathematics

Ilham Robert*

Department of Physics, Wright State University Bowshot School of Medicine, Dayton, USA

Description

Numbers, sets, functions, expressions, geometric forms, transformations of other mathematical objects and spaces are the most fundamental mathematical objects. Mathematical objects mainly deals with the theorems, proofs, and even theories.

Algebraic geometry plays a vital role in modern mathematics consists of subjects such as complex analysis, topology, and number theory. The study of systems of polynomial equations in several variables, algebraic geometry picks up where equation solving leaves off and it becomes even more important to understand the intrinsic properties of a system of equations than it is to find a specific solution; this leads to some of the most conceptually and technically challenging areas in mathematics. Algebraic geometry, often known as commutative algebra, is a branch of mathematics that deals with sets that are characterized by algebraic equations. It gives brief information regarding the form of such sets.

As its name indicates, it involves both algebra and geometry generally, to the points with coordinates in an algebraically closed field. Number fields, finite fields and function fields are all terminology used to describe the field of rational numbers. Diophantine geometry is the study of the points of an algebraic variety with coordinates in fields that are not algebraically closed and appear in algebraic number theory. Singularities of algebraic varieties account for a significant portion of singularity theory. Computational algebraic geometry is emerged at the intersection of algebraic geometry and computer algebra, with the rise of computers.

Complex analysis is associated with complex numbers include Euler, Gauss, Riemann. Complex analysis, namely the theory of conformal mappings, has a wide range of practical applications and is utilized extensively in analytic number theory. String theory, which analyzes conformal invariants in quantum field theory, is another prominent application of complex analysis. Complex dynamics and fractal images generated by iterating holomorphic functions are two more famous applications of complex analysis. Topology is part of geometric object that lies under continuous deformations of subspaces, and more generally, all kinds of continuity. Number theory is the study of the set of positive whole numbers, sometimes known as the natural numbers, and includes integers and integer-valued functions. Polynomial equation with rational coefficients is an algebraic expression that can be determined by using a finite number of operations with just those same types of coefficients.

Algebraic varieties, which are geometric representations of solutions to systems of polynomial equations, are the primary objects of study in algebraic geometry. Some of the most studied classes of algebraic variety include plane algebraic curves, which include lines, circles, parabolas, ellipses, and hyperbolas, cubic curves, such as elliptic curves, and quartic curves, such as lemniscates and Cassini ovals. If the coordinates of a plane point fulfil a specified polynomial equation, it belongs to an algebraic curve. Basic questions entail the investigation of specific points of interest such as solitary points, inflection points, and infinity points. The topology of the curve and relationships between curves provided by different equations are discussed in more advanced issues.

Algebraic geometry is an important part of modern mathematics, having many conceptual ties to subjects like complex analysis, topology and number theory. Algebraic geometry picks up where equation solving leaves off and it becomes even more important to understand the intrinsic properties of the totality of solutions of a system of equations than it is to find a specific solution; this leads to some of the most conceptually and technically challenging areas in all of mathematics.

How to cite this article: Robert, Ilham. "The Fundamental Objects of Study in Physical Mathematics ." *J Phys Math* S5 (2021): 004.

***Address for Correspondence:** Dr. Ilham Robert, Department of Physics, Wright State University Bowshot School of Medicine, Dayton, USA; E-mail: Robert @gmail.com*

Received date: November 01, 2021**; Accepted date:** November 15, 2021**; Published date:** November 22, 2021