

Received date: 03-12-2022 | Accepted date: 06-12-2022 | Published date: 23-03-2023

Ideas off isaac newton and their computer implementation

Penio Dimitrov Lebamovski

Bulgarian Academy of Sciences, Sofia

This article outlines Isaac Newton's most significant contributions to mathematics and physics and their computer implementation. The following two software tools were used to describe the results: Wolfram Mathematica and Java3D. Isaac Newton laid the foundations of differential and integral calculus. Through the principles of the method of fluxes, he expresses the reciprocal nature of the operations of integration and differentiation. He is writing the integrals and derivatives in two columns. With the help of Wolfram Mathematica software, it is easy to confirm Newton's discovery by drawing graphs. At the same time, with this discovery, the scientist laid the foundations of numerical methods, which, as is known today, can be used with the help of the computer. Newton was the first to introduce the concept of limit, which is known to be used in mathematical analysis. He presents it by the method of limits in 12 lemmas. In this paper, a new approach based on the method is given, with the help of which the computer can draw a regular polygon, and its face can be calculated subsequently. The main goal of the proposed new boundary method is to reach the boundary of an inscribed regular polygon in a circle. The study begins by drawing a regular polygon with three vertices. After that, the number of vertices increases without limit until describing a circle. Newton explains this concept also physics-mathematically. Today his method is very relevant as it is directly related to the computer and its graphic capabilities. The Java programming language and specifically the Java3D library were used to describe these results.

Recent publications:

1. Lebamovski, P.: The Effect of 3D technologies in stereometry training. CBU International Conference Proceedings, Vol. 1, pp. 68-74. (2021) <https://doi.org/10.12955/pns.v2.155>
2. Newton, I. (2002). "The Mathematical principles of natural philosophy". Edited by David R. Wilkins.
3. Lebamovski, P., Petkov, E.: Usage of 3D technologies in stereometry training. CBU International Conference Proceedings, Vol.1 (2020), pp. 139-146. (2020).

Biography

Penio Dimitrov Lebamovski, workplace - Bulgarian Academy of Sciences, Institute of Robotics, Sofia №1113. Obtained a bachelor's degree in the city of Veliko Tarnovo, Veliko Tarnovo University "St. St. Cyril and Methodius", in 2014. Major "Mathematics and Informatics". In 2016, he obtained a master's degree.

p.lebamovski@abv.bg