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Editorial

Brief introduction of articles in Volume 1, Issue 3

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Readers will find five original research articles and one review article in this issue that make compelling arguments for the applications of mathematical theories and techniques to areas including physics, music, and ecology. The authors of this issue discovered some problems that are widespread but that not many scholars have looked into or examined; hence, the research content of the pieces in this issue is fresh. Readers may readily appreciate the allure of applied mathematics by reading those articles.

As the language and instrument of physics, mathematics is used to describe physical phenomena. formulate physical concepts, organize experimental data, carry out logical analysis, and construct physical laws[1]. It follows that there is a close link between mathematics and physics. The efficiency and dynamics of a vibro-impact damper (a single-sided vibro-impact nonlinear energy sink, or SSVI NES) were examined by Lizunov et al.[2] in relation to the parameters of the exciting force. They discovered that the damper is quite effective over a wide range of the amplitude of the exciting force and in its frequency range, which is higher than the resonant frequency; the damper efficiency in these regions is fairly stable[2]. This article demonstrates how important mathematics is to physics study.

It is true that mathematics is an omnipotent instrument, and there are intricate connections between mathematics and music[3]. Chakraborty and Singh[4] pointed out that the analysis of melody lengths is a neglected area in music research, and thus they analyzed the statistical features of the lengths of a well-known *bandish* in Raga *Bihag* by employing the statistical method. Additionally, their research yields promising results that fully capture the broad application of mathematics and offer new research directions.

People have always been concerned about ecological issues. Some researchers have used mathematical techniques to try and solve ecological challenges, with positive results. According to the evaluation of Mukherjee et al.[5], one of the main reasons for the potential coexistence of mosquito prey and predators in the wetlands is mutual interference. The utilization of mathematical techniques in their investigation has enabled them to derive a promising study result that could perhaps advance the field of biological control research.

It is believed that mathematical theories and techniques can be used to solve problems across a wide range of unexplored study topics, thereby advancing pertinent future investigations.

Conflict of interest

The author declares no conflict of interest.

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