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Editorial

Mathematical Modeling and Simulation in Mechanics and Dynamic Systems, 2nd Edition

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1. Introduction

Although it has been considered difficult to make further contributions in the field of mechanics, the spectacular evolution of technology and numerical calculation techniques has made these opinions shift, and increasingly sophisticated models have been developed, which should predict, as accurately as possible, the phenomena that take place in dynamic systems. Therefore, researchers have come to study mechanical systems with complicated behavior using experiments and computer models [1–3]. The key requirement is that the system is nonlinear in its form. The impetus in mechanics and dynamical systems has come from many sources: computer simulation, experimental science, mathematics, and modeling [4–7]. There is a wide range of influences. Computer experiments change the way in which we analyze these systems. Topics of interest include, but are not limited to, modeling mechanical systems, new methods in dynamic systems, the behavior simulation of a mechanical system, nonlinear systems, multibody systems with elastic elements, multi-degrees of freedom, mechanical systems, experimental modal analysis, and mechanics of materials.

2. Statistics of the Special Issue

There were 28 total submissions to this Special Issue, of which 13 were published (46.4%) and 15 rejected (63.6%). The authors' geographical distribution is shown in Table 1, and it can be seen that the 67 authors are from 13 different countries. Note that it is usual for a paper to be written by more than one author and for authors to collaborate with authors with different affiliations or multiple affiliations.

Table 1. Geographic distribution of authors by country.

Country	Number of Authors
Romania	13
China	9
Spania	1
India	2
Pakistan	5
Egypt	1
Morocco	6
South Africa	3
Chile	2
Poland	3
Mexico	4
Hungary	1

The following papers were published in this Special Issue:

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(1) Vlase, S.; Marin, M.; Negrean, I.N. Finite Element Method-Based Elastic Analysis of Multibody Systems: A Review. *Mathematics* **2022**, *10*, 257. https://doi.org/10.3390/math10020257.
(2) Xia, S.; Xia, Y.; Xiang, J. Modelling and Fault Detection for Specific Cavitation Damage Based on the Discharge Pressure of Axial Piston Pumps. *Mathematics* **2022**, 10, 2461. https://doi.org/10.3390/math10142461.
(3) Faizan, M.; Ali, F.; Loganathan, K.; Zaib, A.; Reddy, C.A.; Abdelsalam, S.I. Entropy Analysis of Sutterby Nanofluid Flow over a Riga Sheet with Gyrotactic Microorganisms and Cattaneo–Christov Double Diffusion. *Mathematics* **2022**, *10*, 3157. https://doi.org/10.3390/math10173157.
(4) Paliathanasis, A.; Leon, G.; Leach, P.G.L. Lie Symmetry Classification and Qualitative Analysis for the Fourth-Order Schrödinger Equation. *Mathematics* **2022**, *10*, 3204. https://doi.org/10.3390/math10173204.
(5) El Ouadefli, L.; El Akkad, A.; El Moutea, O.; Moustabchir, H.; Elkhalfi, A.; Scutaru, L.M.; Muntean, R. Numerical Simulation for Brinkman System with Varied Permeability Tensor. *Mathematics* **2022**, *10*, 3242. https://doi.org/10.3390/math10183242.
(6) Teng, Y.; Wen, Q.; Xie, L.; Wen, B. Study on Vibration Friction Reducing Mechanism of Materials. *Mathematics* **2022**, *10*, 3529. https://doi.org/10.3390/math10193529.
(7) Tutak, M.; Brodny, J.; John, A.; Száva, J.; Vlase, S.; Scutaru, M.L. CFD Model Studies of Dust Dispersion in Driven Dog Headings. *Mathematics* **2022**, *10*, 3798. https://doi.org/10.3390/math10203798.
(8) Scutaru, M.L.; Marin, M.; Vlase, S. Dynamic Absorption of Vibration in a Multi Degree of Freedom Elastic System. *Mathematics* **2022**, *10*, 4045. https://doi.org/10.3390/math10214045.
(9) Fetecau, C.; Rauf, A.; Qureshi, T.M.; Vieru, D. Steady-State Solutions for MHD Motions of Burgers' Fluids through Porous Media with Differential Expressions of Shear on Boundary and Applications. *Mathematics* **2022**, *10*, 4228. https://doi.org/10.3390/math10224228.
(10) Medrano-Hermosillo, J.A.; Lozoya-Ponce, R.; Rodriguez-Mata, A.E.; Baray-Arana, R. Phase-Space Modeling and Control of Robots in the Screw Theory Framework Using Geometric Algebra. *Mathematics* **2023**, *11*, 572. https://doi.org/10.3390/math11030572.
(11) Száva, I.; Vlase, S.; Száva, I.-R.; Turzó, G.; Munteanu, V.M.; Gălățanu, T.; Asztalos, Z.; Gálfi, B.-P. Modern Dimensional Analysis-Based Heat Transfer Analysis: Normalized Heat Transfer Curves. *Mathematics* **2023**, *11*, 741. https://doi.org/10.3390/math11030741.
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(13) Cao, J.; Chen, H. Mathematical Model for Fault Handling of Singular Nonlinear Time-Varying Delay Systems Based on T-S Fuzzy Model. *Mathematics* **2023**, *11*, 2547. https://doi.org/10.3390/math11112547.

3. Authors of the Special Issue

For the publications in this Special Issue, there was an average of four authors per manuscript.

A list of papers published in this Special Issue can be found in Section 2. It can be seen that most of the articles adhere very well to the theme of the Special Issue. The research was carried out by well-constituted teams of researchers in appropriately equipped laboratories from universities in several countries. Authors from different universities collaborated to achieve common objectives. Each paper includes original results developed by groups of researchers. We note the high number of researchers who have been involved in this project, and we thank them for participating in this Special Issue.

4. Brief Overview of the Contributions to the Special Issue

In this Special Issue, three topics were dominant, namely modeling of the multibody system using the Finite Element Method, applied mathematics in dynamic systems, and analytical methods in multibody systems.

Author Contributions: Conceptualization, M.L.S. and C.-I.P.; methodology, M.L.S. and C.-I.P.; software, M.L.S. and C.-I.P.; validation, M.L.S. and C.-I.P.; formal analysis, M.L.S. and C.-I.P.; investigation, M.L.S. and C.-I.P.; resources, M.L.S. and C.-I.P.; data curation, M.L.S. and C.-I.P.; writing—original draft preparation, M.L.S. and C.-I.P.; writing—review and editing, M.L.S. and C.-I.P.; visualization, M.L.S. and C.-I.P.; supervision, M.L.S. and C.-I.P.; project administration, M.L.S. and C.-I.P. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest: The authors declare no conflicts of interest.

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7. Vlase, S.; Negrean, I.; Marin, M.; Nastac, S. Kane's Method-Based Simulation and Modeling Robots with Elastic Elements, Using Finite Element Method. *Mathematics* **2020**, *8*, 805. [CrossRef]