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Editorial

Symmetry in Engineering Sciences

Francisco G. Montoya *, Raúl Baños, Alfredo Alcayde and Francisco Manzano-Agugliaro

Department of Engineering, University of Almeria, ceiA3, 04120 Almeria, Spain; rbanos@ual.es (R.B.); aalcayde@ual.es (A.A.); fmanzano@ual.es (F.M.-A.)

* Correspondence: pagilm@ual.es; Tel.: +34-950-015791; Fax: +34-950-015491

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Abstract: The symmetry concept is mainly used in two senses. The first from the aesthetic point of view of proportionality or harmony, since human beings seek symmetry in nature. Or the second, from an engineering point of view to attend to geometric regularities or to explain a repetition process or pattern in a given phenomenon. This special issue dedicated to geometry in engineering deals with this last concept, which aims to collect both the aspects of geometric solutions in engineering, which may even have a certain aesthetic character, and the aspect of the use of patterns that explain observed phenomena.

Keywords: asymmetry; synchronization; topology; electrical circuits; electronic devices; mechanical structures; robots; graphic modelling; complex networks; optimization; computing applications

1. Introduction

Symmetry is a frequent pattern widely studied in different research fields. In particular, complex systems with symmetry arise in engineering science (e.g., in mechanical engineering, symmetric and synchronized systems are often used to satisfy stability criteria for rotating structures; in electrical engineering, the study of symmetrical and asymmetrical faults in power systems is a critical issue; in telecommunications engineering, many systems are symmetrical since data speed or quantity is the same in both directions; in civil engineering, the strength of the objects depend on the symmetry; in computer engineering, symmetric network structures and symmetric algorithms are often studied, etc.).

This Special Issue invites researchers to submit original research papers and review articles related to any engineering discipline where theoretical or practical issues of symmetry are considered. The topics of interest include, but are not limited to:

- Symmetry in electrical and electronic engineering
- Symmetry in mechanical engineering
- Symmetry in automation and robotic engineering
- Symmetry in computer engineering
- Symmetry in telecommunications engineering
- Symmetry in civil engineering (transportation, hydraulics, etc.)
- Symmetry in chemical engineering
- Symmetry and topology of complex networks in engineering
- Symmetry and optimization in engineering applications

2. Statistics of the Special Issue

The statistics of the call for papers for this special issue related to published or rejected items was: Total submissions (19), Published (12; 73%), and Rejected (7; 27%).

The authors' geographical distribution by country for published papers is shown in Table 1, where it is possible to observe 45 authors from five different countries. Note that it is usual for an article to be signed by more than one author and for authors to collaborate with others of different affiliations.

Table 1. Geographic distribution by the country of author.

Country	Number of Authors
China	31
Spain	8
Pakistan	3
Czech Republic	2
Korea	1
Total	45

3. Authors of this Special Issue

The authors of this special issue and their main affiliations are summarized in Table 2, where there are four authors on average per manuscript.

Table 2. Affiliations and bibliometric indicators for the authors.

Author	Main Affiliation	Reference
Cristina Velilla	Universidad Politécnica de Madrid	[1]
Alfredo Alcayde	University of Almeria	[1]
Carlos San-Antonio-Gómez	Universidad Politécnica de Madrid	[1]
Francisco G. Montoya	University of Almeria	[1]
Ignacio Zavala	Universidad Politécnica de Madrid	[1]
Francisco Manzano-Agugliaro	University of Almeria	[1]
José Ignacio Rojas-Sola	University of Jaen	[2]
Eduardo De la Morena-De la Fuente	University of Jaen	[2]
Yu Zhang	South China University of Technology	[3]
Yuanpeng Zhu	South China University of Technology	[3]
Xuqiao Li	South China University of Technology	[3]
Xiaole Wang	South China University of Technology	[3]
Xutong Guo	South China University of Technology	[3]
Nasar Iqbal	University of Engineering and Technology	[4]
Sadiq Ali	University of Engineering and Technology	[4]
Imran Khan	University of Engineering and Technology	[4]
Byung Moo Lee	Sejong University	[4]
Ling Wang	Henan Agricultural University	[5]
Dongfang Zhou	National Digital Switching System Engineering and Technology R&D Center (NDSC)	[5]
Hui Tian	Henan Agricultural University	[5]
Hao Zhang	Henan Agricultural University	[5]
Wei Zhang	Henan Agricultural University	[5]
Yanrong Wang	Beihang University	[6]
Hang Ye	Beihang University	[6]
Xianghua Jiang	Beihang University	[6]
Aimei Tian	Beihang University	[6]
Daniel Chalupa	Brno University of Technology	[7]
Jan Mikulka	Brno University of Technology	[7]
Ke Ruan	Xi'an University of Architecture and Technology	[8]
Qi Zhang	Xi'an University of Architecture and Technology	[8]
Han-ye Zhang	Jiujiang University	[9]
Wei-ming Lin	Jiujiang University	[9]
Ai-xia Chen	Jiujiang University	[9]
Siqi Liu	Beijing Jiaotong University	[10]
Boliang Lin	Beijing Jiaotong University	[10]
Jianping Wu	Beijing Jiaotong University	[10]

Table 2. *Cont.*

Author	Main Affiliation	Reference
Yinan Zhao	Beijing Jiaotong University	[10]
Jianjie Zheng	Dalian Jiaotong University	[11]
Yu Yuan	Dalian Jiaotong University	[11]
Li Zou	Dalian Jiaotong University	[11]
Wu Deng	Dalian Jiaotong University	[11]
Chen Guo	Dalian Jiaotong University	[11]
Huimin Zhao	Dalian Jiaotong University	[11]
Zihan Qu	Beijing Jiaotong University	[12]
Shiwei He	Beijing Jiaotong University	[12]

4. Brief Overview of the Contributions to This Special Issue

The analysis of the topics (Table 3) identifies or summarizes the research undertaken. This section classifies the manuscripts according to the topics proposed in the special issue. It was observed that there are four topics that have dominated the others: Symmetry in electrical and electronic engineering; Symmetry in mechanical engineering; Symmetry in computer engineering; and Symmetry in civil engineering (transportation).

Table 3. Topic analysis.

Topic	Number of Manuscripts
Symmetry in electrical and electronic engineering	2
Symmetry in mechanical engineering	2
Symmetry in computer engineering	2
Symmetry in civil engineering (transportation, hydraulics, etc.)	2
Symmetry in automation and robotic engineering	1
Symmetry in telecommunications engineering	1
Symmetry and topology of complex networks in engineering	1
Symmetry and optimization in engineering applications	1
Total	12

Author Contributions: All authors contributed equally to this work.

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

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