

# New challenges for Meccanica after 55 years

Anna Pandolfi<sup>[0000-0002-7084-7456]</sup>

Dipartimento di Ingegneria Civile ed Ambientale, Politecnico di Milano, Italy  
anna.pandolfi@polimi.it

**Abstract.** The long journey of AIMETA has been sided for 55 years by Meccanica. In compliance with the ideals of the founders, the journal has been a distinguished reference for the Italian Mechanics community. In the last 20 years, Meccanica has turned progressively to become an international window for Eastern countries. The journal is facing new challenges, related to the uncontrolled run for publishing and citing, but the strong scientific picture envisioned by the founders remains the guidance for submission and acceptance.

**Keywords:** Meccanica, AIMETA, metrics, science.

In 1966, one year after the founding of the Italian Association of Theoretical and Applied Mechanics, the official Journal of the association, Meccanica, was launched as a forum to collect the contributions to the several branches of Mechanics [1]. From an initial prevailing Italian authorship, the journal has become more international, seeing a progressive growth in popularity especially in Eastern emerging countries. Today, internationality characterizes not only the contributing authors, but also the Associate Editor Board. In the next paragraphs, after a brief introduction of the recently renewed Editorial board, a compendium of the current trends of Meccanica is presented, according to the statistics of submissions and acceptance during the short span of time between January 2021 and September 2021. The discussion does not involve the relatively large number of manuscripts published in 2021, so that the 2020 submissions are excluded. Some comments on the observed trends and on influence of the impact numbers on the average quality of the published research conclude this overview.

## 1 Editorial Board

Luigi Gambarotta has served as Editor in Chief of Meccanica since 2015 to the end of 2020. His dedication to the Journal, in terms of time and passion, has pushed the notoriety of Meccanica and increased its reputation among the Italian and International scientific community. After five years, he decided to resign from the position and I have been appointed to replace him. The move had not indifferent repercussion on the Editorial Team and Associate Editor board of the journal. The role of Managing Editor is now taken by Maurizio Quadrio, from the Department of Aerospace Sciences and Technology of the Politecnico di Milano, and the role of Assistant Editor by Rosalba Ferrari,

from the Department of engineering and Applied Sciences of the University of Bergamo.

The current Associate Editor Board of *Meccanica* includes fourteen foreign members, most of which have been appointed by the previous Editors in Chief since the beginning of the new century:

- Katia Bertoldi, Harvard University, USA
- Luca Brandt, Royal Institute of Technology, Sweden
- Eliot Fried, Okinawa Institute of Science and Technology, Japan
- Paulo Batista Gonçalves, Pontifical Catholic University, Rio de Janeiro, Brazil
- Wei Hong, Southern University of Science and Technology, P.R. China
- Djimedo Kondo, Sorbonne University, France
- Andreas Müller, Johannes Kepler University, Austria
- Chérif Nouar, Université de Lorraine, France
- Zhongxiao Peng, University of New South Wales, Sydney, Australia
- Franck Plouraboué, Université de Toulouse, France
- Tomasz Sadowski, Lublin University of Technology, Poland
- Stephanos Theodossiades, Loughborough University, United Kingdom
- Zaihua Wang, Nanjing University of Aeronautics and Astronautics, P.R. China
- Mohammad I. Younis, King Abdullah University of Science & Technology, Saudi Arabia

and ten Italian members:

- Maurizio Brocchini, Università Politecnica delle Marche, Italy
- Claudia Comi, Politecnico di Milano, Italy
- Giorgio Dalpiaz, University of Ferrara, Italy
- Antonio DeSimone, Scuola Internazionale Superiore di Studi Avanzati, Italy
- Eugenio Dragoni, Università degli Studi di Modena e Reggio Emilia, Italy
- Alessandro Iafrati, Consiglio Nazionale delle Ricerche, Italy
- Antonina Pirrotta, Università di Palermo, Italy
- Luigi Preziosi, Politecnico di Torino, Italy
- Elio Sacco, University of Naples Federico II, Italy
- Epifanio G. Virga, Università degli Studi di Pavia, Italy

The precious contribution of the Associate Editors is fundamental to the journal. They are distinguished scientists, with strong expertise in various fields of Mechanics, and represent the task force for the selection of the proper reviewers for each submission. Furthermore, their presence in the Editorial Board of *Meccanica* increases the respectability and the appeal of the Journal especially to young scientists that look at them as reference. We foresee, indeed, the possibility that the innovative research fields object of the current studies of the Editorial Board members (bio-fluid-dynamics, liquid crystals, metamaterials, bio-robotics, to mention a few) can find a proper collocation in *Meccanica*.

## 2 First submission

Meccanica is an international journal. In the first nine months of 2021, out of 532 submissions, only 3% of the submitted manuscripts are from Italy, while 75% of the submissions are from Asia, and 60% specifically from China, Iran, and India, see Fig. 1. The chart confirms the general trend observed during the last decade in many international Journals, and it is the natural consequence of the heavy pressure to publish coming from the eastern countries.

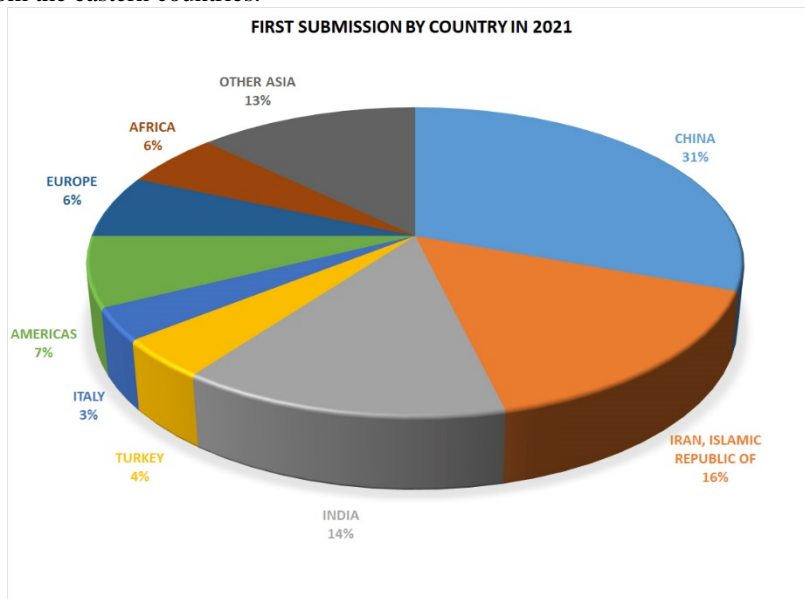


Figure 1. Distribution of the corresponding author country for the 532 manuscripts submitted to Meccanica in the first nine months of 2021.

Internationality affects the traditional classification of submissions in Solids, Fluids, Machines and General Mechanics. The four sectors, still carrying some significance for AIMETA and for Italian authors, are not a clear indication for foreign submission. Fig. 2 shows the subdivision in the four sectors according to the 532 first submissions in 2021.

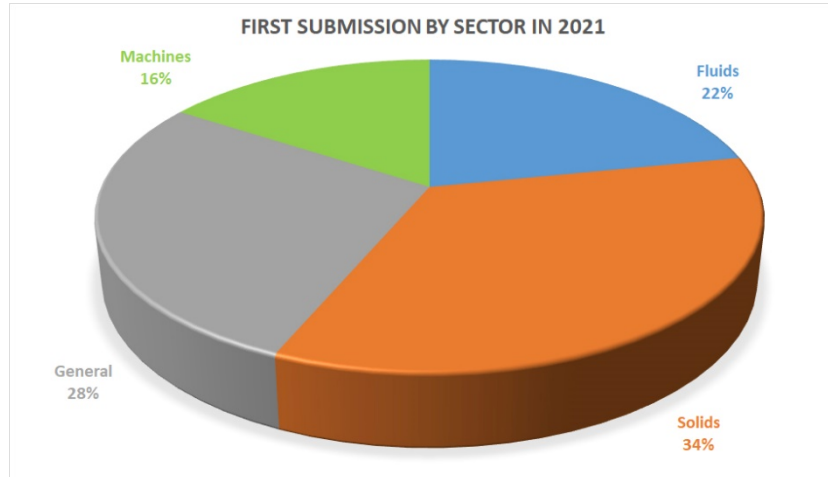


Figure 2. Distribution of the submission section (Solids, Fluids, Machines and General) for the 532 manuscripts submitted to Meccanica in the first nine months of 2021.

The distinction between machines and solids does not hold for international contributions. Very difficult is for authors to select the proper sector for problems that involve fluid-structure or fluid-solid interactions. Papers dealing with coupled physics are not properly located between Solid or General sectors. The difficulty is certainly related to the variety of modern topics associated to mechanics, including computational mechanics, biomechanics, metamaterials. As matter of fact, the selection operated by the authors must be often ignored in the first evaluation phase.

### 3 Contents and first editorial decision

A high rate of submissions is unfortunately related to a low average quality of the manuscripts. Many manuscripts discuss a specific application, without presenting innovative ideas or original aspects of research related to mechanics. If they do not fit the scope of Meccanica, but their overall quality is still acceptable, they are transferred to other journals. Regrettably, many manuscripts are affected by other serious issues such as plagiarism or self-plagiarism, that can reach levels up to 50% of the content, or insufficient quality of the editorial presentation, or absence of any scientific novelty. These submissions are rejected without undergoing a review process.

Traditionally, Meccanica has been a rigorous journal, with rather low acceptance rates. According to the editorial of Luigi Gambarotta [2], in 2015 the ratio between published paper and submission was 35%. The tradition of severity has been confirmed also in the first period of 2021. Fig. 3 shows the results of the first screening operated by the Editorial team on the new submission. Only 38% of the submitted paper have initiated a review process, while 15% have been transferred.

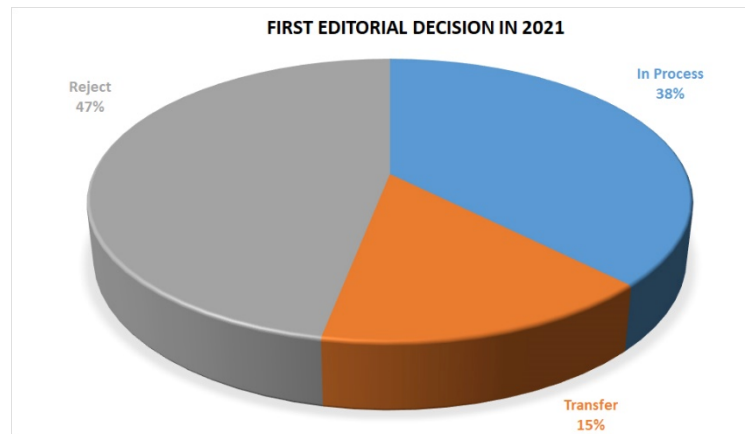


Figure 3. Distribution of the first editorial decision for the 532 manuscripts submitted to Meccanica in the first nine months of 2021.

In this brief compendium we explicitly omit the data on the published papers in 2021, for two reasons: two more issues are missing to complete the volume 56, and most of the published papers in the first months of 2021 were not initially managed by the present Editorial Team.

The overall impression that the Editorial Team has matured in this brief time is that Italian authors have a considerable respect of Meccanica. Thus, Italian contributions are in general characterized by high scientific quality and accurate editorial presentation, and we wish that this impression can persist in the future.

#### 4 The battle of quality versus numbers

In the last decade, Meccanica has been experiencing the increment of the number of submission. This trend, shared with all scientific journals, is motivated by two main reasons, one respectable, one deplorable. The respectable motivation is the increase of number of people involved in research, due also to the emergence in the scientific community of highly populated countries such as China and India. The deplorable motivation is the pressure induced by the more and more recurrent use of variety of metrics of scientific productivity, including citations, Hirsch index, views, and downloads. Quantitative indicators, originally conceived by publishers to monitor the performance of a journal, have become a too easy way to replace the laborious qualitative evaluation of the research with the automatized collection of numbers. Quantity of production is sometimes misinterpreted as synonymous of quality for career advance and promotions [3] and in selective calls for grants or awards. The increasing reliance on metrics to evaluate scholarly publications has produced radically new forms of academic fraud and misconduct [4].

The pressure to increase numbers pushes for publishing an article also when the research is not self-contained, assuming the form of “salami slicing” and lowering the

average quality of the papers submitted to journals: simultaneous or concurrent submission of a manuscript describing the same research to more than one journal, production of self-similar papers with incremental differences and lack of originality, presence of non-contributing authors, inclusion of additional authors after the first round of review, unacceptable count of self-citations, citation rings, requests from the supposedly anonymous reviewers to cite their own works, to mention the most frequent.

Meccanica is not exempt: submissions revealing misconducts (mostly self-plagiarism) are received in a regular basis and unethical reviewers are not isolated phenomena. The journal, however, fully comply with the ethical policy of the publisher, and the Editorial Board in the last years has taken a strong point of view to discourage such behaviors. The consequences of a strong position may be unfavorable to the immediate visibility of the journal: a rigorous journal is scientifically respected but often it stands in lower positions in the journal ranking. But in the long run, it is going to be the winning choice. Today, Meccanica is behaving well, having a respectable impact factor (2.298 in 2021), albeit in the classification of it is surpassed by other journals that are less critical with submissions.

To the young authors and readers of Meccanica, the suggestion is to keep strong in good research, developing an open mind and curiosity about scientific questions without falling in the vortex of the imperative “impact or perish”. Correct behaviors will increase the credibility of the Journal and reflect the ideals of the members of the AIMETA.

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