ISSN 2732–0189 (Online)
ISSN 1586–2070 (Print)

JOURNAL OF COMPUTATIONAL AND APPLIED MECHANICS

An Open Access International Journal

Published by the University of Miskolc

VOLUME 15, NUMBER 2 (2020)

MISKOLC UNIVERSITY PRESS

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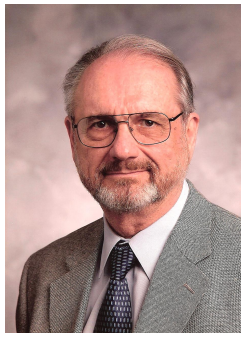
Journal of Computational and Applied Mechanics, Vol. 15, No. 2, (2020), pp. 79–80
DOI: 10.32973/jcam.2020.005

PREFACE



The papers in the present and next issues of JCAM are dedicated to an excellent scientist: Professor Barna Szabó, who turned 85 this fall. He was a student of the Faculty of Mining Engineering of the Technical University for Heavy Industry in Miskolc (now the University of Miskolc) between 1954 and 1956. For political reasons Professor Szabó had to leave Hungary following the failed Hungarian uprising in 1956. After emigrating from Hungary he completed his university studies in Canada, and then obtained a PhD degree and made a scientific career in the United States. It is worth mentioning his important contribution to the theory of the finite element method here. Readers who would like to have more details concerning Professor Szabó's scientific activity are referred to paper [1] in JCAM.

One of his fundamental results was the observation of the fact that increasing the polynomial degree p of elements on a fixed mesh results in a rate of convergence in energy norm that is faster than if fixed p and uniform or quasi-uniform mesh refinement, known as the h-version, are used. The term "p-version of the finite element method" first appeared in a 1981 publication [2] in which the theoretical foundations were established for a discretization strategy whereby the finite element mesh is fixed and the polynomial degree p of the elements is progressively increased. The results presented in this paper motivated research in the applied mathematics community on the properties of high order finite element methods, which still continues.

Szabó recognized that it was of fundamental importance from the engineering and scientific perspectives to formulate mathematical problems that simulate some specific aspects of a physical reality with sufficient reliability to justify basing engineering decisions on them.

In 1989 Szabó co-founded a company called Engineering Software Research and Development, Inc. (ESRD). The mission of this company is "to create and market software tools for the advancement of the quality, reliability and timeliness of information that serves the engineering decision-making process[1]". ESRD produces and markets the software StressCheck, which is the only finite element analysis software tool designed to meet the technical requirements of simulation governance [3]. It is used primarily in the aerospace sector.

Szabó has published over 150 papers and two textbooks [4],[5]. The second edition of book [4] is coming out soon. He is a founding member and Fellow of the US

[1] www.esrd.com

Association for Computational Mechanics. Among his honors are election to the Hungarian Academy of Sciences as External Member in 1995 and Doctor Honoris Causa, University of Miskolc in 1998.

Professor Szabó has never forgotten about his roots. He used to say that "Half of my heart beats for the country that helped me to become who I am now and the second part of my heart beats for my homeland Hungary." Since the early seventies – the communist authorities in Hungary had not allowed him to visit his homeland earlier – there has been a living cooperation between him and members of the Institute of Applied Mechanics at the Miskolc University. We are very grateful for his continuous support and the help he has been providing us even now.

Miskolc, November 15, 2020 László Baranyi, István Páczelt and György Szeidl

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Notes for Contributors

to the Journal of Computational and Applied Mechanics

Aims and scope. The aim of the journal is to publish research papers on theoretical and applied mechanics. Special emphasis is given to articles on computational mechanics, continuum mechanics (mechanics of solid bodies, fluid mechanics, heat and mass transfer) and dynamics. Review papers on a research field and materials effective for teaching can also be accepted and are published as review papers or classroom notes. Papers devoted to mathematical problems relevant to mechanics will also be considered.

Frequency of the journal. Two issues a year (approximately 80 pages per issue).

Submission of Manuscripts. Submission of a manuscript implies that the paper has not been published, nor is being considered for publication elsewhere. Papers should be written in standard grammatical English. The manuscript is to be submitted in electronic, preferably in pdf, format. The text is to be 130 mm wide and 190 mm long and the main text should be typeset in 10pt CMR fonts. Though the length of a paper is not prescribed, authors are encouraged to write concisely. However, short communications or discussions on papers published in the journal must not be longer than 2 pages. Each manuscript should be provided with an English Abstract of about 50–70 words, reporting concisely on the objective and results of the paper. The Abstract is followed by the Mathematical Subject Classification – in case the author (or authors) give the classification codes – then the keywords (no more than five). References should be grouped at the end of the paper in numerical order of appearance. Author's name(s) and initials, paper titles, journal name, volume, issue, year and page numbers should be given for all journals referenced.

The journal prefers the submission of manuscripts in LaTeX. Authors should select the $\mathcal{AMS}$-LaTeX article class and are not recommended to define their own LaTeX commands. Visit our home page for further details concerning how to edit your paper.

For the purpose of refereeing the manuscripts should be sent either to Balázs Tóth (Balazs.TOTH@uni-miskolc.hu) or György SZEIDL (Gyorgy.SZEIDL@uni-miskolc.hu).

The eventual supply of an accepted for publication paper in its final camera-ready form will ensure more rapid publication. Format requirements are provided by the home page of the journal from which sample LaTeX files can be downloaded:

http://www.mech.uni-miskolc.hu/jcam

These sample files can also be obtained directly (via e-mail) from Balázs TÓTH (Balazs.TOTH@uni-miskolc.hu), upon request.

One issue of the journal and ten offprints will be provided free of charge and mailed to the correspondent author. Since JCAM is an open access journal each paper can be downloaded freely from the homepage of the journal.

The Journal of Computational and Applied Mechanics is abstracted in Zentralblatt für Mathematik and in the Russian Referativnij Zhurnal.

Secretariat of the Vice-Rector for Research and International Relations, University of Miskolc
Responsible for publication: Prof. Dr. Zita Horváth, rector
Published by the Miskolc University Press under the leadership of Attila Szendi
Responsible for duplication: Works manager Erzsébet Pásztor
Number of copies printed: 75
Put to the Press on December 7, 2020
Number of permission: TNRT.2020-221.ME.
ISSN 2732–0189 (Online)
ISSN 1586–2070 (Print)

A Short History of the Publications of the University of Miskolc

The University of Miskolc (Hungary) is an important center of research in Central Europe. Its parent university was founded by the Empress Maria Teresia in Selmecbánya (today Banska Štiavnica, Slovakia) in 1735. After the first World War the legal predecessor of the University of Miskolc moved to Sopron (Hungary) where, in 1929, it started the series of university publications with the title *Publications of the Mining and Metallurgical Division of the Hungarian Academy of Mining and Forestry Engineering* (Volumes I.-VI.). From 1934 to 1947 the Institution had the name Faculty of Mining, Metallurgical and Forestry Engineering of the József Nádor University of Technology and Economic Sciences at Sopron. Accordingly, the publications were given the title *Publications of the Mining and Metallurgical Engineering Division* (Volumes VII.-XVI.). For the last volume before 1950 – due to a further change in the name of the Institution – *Technical University, Faculties of Mining, Metallurgical and Forestry Engineering, Publications of the Mining and Metallurgical Divisions* was the title.

For some years after 1950 the Publications were temporarily suspended.

After the foundation of the Mechanical Engineering Faculty in Miskolc in 1949 and the movement of the Sopron Mining and Metallurgical Faculties to Miskolc, the Publications restarted with the general title *Publications of the Technical University of Heavy Industry* in 1955. Four new series - Series A (Mining), Series B (Metallurgy), Series C (Machinery) and Series D (Natural Sciences) - were founded in 1976. These came out both in foreign languages (English, German and Russian) and in Hungarian.

In 1990, right after the foundation of some new faculties, the university was renamed to University of Miskolc. At the same time the structure of the Publications was reorganized so that it could follow the faculty structure. Accordingly three new series were established: Series E (Legal Sciences), Series F (Economic Sciences) and Series G (Humanities and Social Sciences). The latest series, i.e., the series H (European Integration Studies) was founded in 2001. The eight series are formed by some periodicals and such publications which come out with various frequencies.

Papers on computational and applied mechanics were published in the

Publications of the University of Miskolc, Series D, Natural Sciences.

This series was given the name Natural Sciences, Mathematics in 1995. The name change reflects the fact that most of the papers published in the journal are of mathematical nature though papers on mechanics also come out.

The series

Publications of the University of Miskolc, Series C, Fundamental Engineering Sciences

founded in 1995 also published papers on mechanical issues. The present journal, which is published with the support of the Faculty of Mechanical Engineering and Informatics as a member of the Series C (Machinery), is the legal successor of the above journal.

Journal of Computational and Applied Mechanics

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Contributed Papers