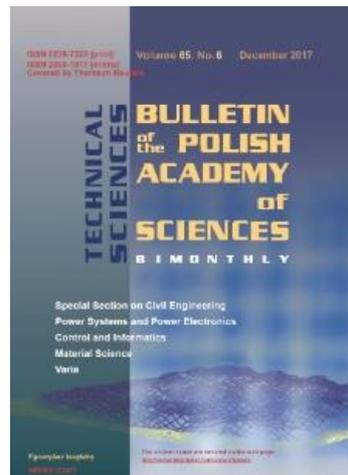


Special Section on

Lightweight Structures in Civil Engineering – Contemporary Problems



Theme. Lightweight structures are civil engineering objects which distinguish themselves from similar structures erected up till now by relatively small amount of construction material and extremely high design parameters such as: large spans of roofs or bridges without middle supports, considerable height of buildings, towers or masts, and extremely large useful surface or free volume of buildings, tanks or reservoirs. It is intended that all the following topics can be included: spatial lattice structures, plate and shell structures, domes and membranes, high-rise buildings, towers, reservoirs, bridges, and thin-walled, tension, cable and pneumatic structures. Any kind of material and structures defined above can be discussed. All methods of analysis, including analytical, numerical and experimental ones, are also welcomed.

This Special Section of BPAST will be devoted mainly to selected papers presented at the International Conference “*Lightweight Structures in Civil Engineering LSCE 2021*” organized in 2021 by Lodz University of Technology. The Conference has been held for a number of years. Its initiator Professor Jan B. Obrębski (who died in 2020) was a longtime researcher at Warsaw University of Technology and the main organizer of these scientific events for twenty years. The LSCE 2021 conference organized in Łódź on the 2nd and 3rd of December shall be held as a tribute to honour the achievements and work of Professor Jan B. Obrębski. The Conference is a part of research activities of the Polish Chapters of International Association for Shell and Spatial Structures.

The Conference will focus on a variety of scientific and technical issues concerning broadly defined lightweight structures, presenting scientific achievements of participants of the seminar.

Topics of interest include (but are not limited to) the following issues:

- lightweight structures,
- structural optimization,
- analytical methods in structural design,
- computer modeling in structural design,
- space structures,
- cable structures,
- reliability analysis,
- structural retrofitting,
- structural engineering,
- experimental tests on structural members,

- architecture,
- architectural design,
- form finding.

Guest Editors:

dr hab. inż. Jacek Szafran – Lodz University of Technology, Poland

prof. Alphose Zingoni – University of Cape Town, Republic of South Africa

prof. Maria Pia Repetto – University of Genoa, Italy

prof. dr hab. inż. Marcin Kamiński – Lodz University of Technology, Poland

Dr hab. Eng. **Jacek Szafran** currently is working on Łódź University of Technology, Faculty of Civil Engineering, Architecture and Environmental Engineering. Ph.D. in the range of technical sciences in civil engineering (defended with distinction); PhD dissertation entitled “Stochastic analysis and reliability of steel telecommunication towers structures”. Habilitation received for of monothematic publications cycle having a common title “Experimental and computer reliability analysis of the steel truss towers”. He authored over 50 scientific publications in the peer-reviewed international journals, proceedings of the major international journals or as the book chapters. His research activities concerns steel structures mechanics and design aspects, reliability analysis of engineering structures, and also research and development in telecommunication structures. His is also a practicing engineer and author over 700 independent telecommunication structures located in Poland.

Alphose Zingoni earned an MSc (with distinction) and a PhD from Imperial College London in 1992, and was a recipient of a prestigious postdoctoral fellowship of the Royal Commission for the Exhibition of 1851 from 1992 to 1994. He held appointment as Dean of the Faculty of Engineering at the University of Zimbabwe from 1996 to 1999, before moving to the University of Cape Town in 1999, where he served as Head of the Department of Civil Engineering from 2008 to 2012. His research spans shell structures, vibration analysis, studies of symmetry in structural mechanics, and group-theoretic formulations. He has written numerous scientific papers and four books in these areas, and serves on the editorial boards of several international journals. He is founder, chair and editor of the Structural Engineering, Mechanics and Computation (SEMC) series of international conferences, successfully held in Cape Town every 3 years since 2001. In recognition of his outstanding contributions, three learned societies have elected him a Fellow: the South African Academy of Engineering, the Institution of Structural Engineers (London), and the International Association of Bridge and Structural Engineering (Zurich). He received a B1 rating of the National Research Foundation in 2016, and in the same year, was elected a Fellow of the University of Cape Town in recognition of “original distinguished academic work”. In 2019, he won the University of Cape Town Book Award for his book “Shell Structures in Civil and Mechanical Engineering”, published in 2018 by the Institution of Civil Engineers (ICE), London.

Maria Pia Repetto is full professor of structural engineering at Department of Civil, Chemical and Environmental Engineering of the University of Genoa (Italy), where she coordinates the M.Sc Degree of Architectural Engineering, the PhD Curriculum on Structural and Geotechnical Engineering, Mechanics and Materials and she teaches Steel Construction and Wind Engineering courses.

She is member of the Giovanni Solari Wind Engineering and Structural Dynamics Research Group (GS-WinDyn), working in the multidisciplinary field of interactions between wind and structures (<http://www.windyn.org>). She is actually leading the ERC-THUNDERR project "Detection, simulation, modelling and loading of thunderstorm outflows to design wind-safer and cost-efficient structures" financed by European Research Council (ERC). The project involves multidisciplinary research activities in the fields of construction technique and atmospheric physics, with experimental, numerical and analytical approaches. **Maria Pia Repetto** is author of 125 scientific publications mainly addressed to wind engineering problems involving the analysis of wind-induced actions, response and fatigue of structures, risk assessment of infrastructures under wind actions, the wind fields modelling in urban environment, the analysis of thunderstorm wind flow and structural response, the full-scale monitoring of slender structures. The outstanding achievements and original contributions of her research have been awarded by the Junior Award 2011 from International Association for Wind Engineering (IAWE) and by the Raymond C. Reese Research Prize 2014 from American Society of Civil Engineer (ASCE-SEI).

Prof. dr hab. **Marcin Kamiński** (Scopus Author ID: 35275335000; ResearcherID: A-5757-2008; ORCID profile: 0000-0002-8180-6991) is now Head of Civil Engineering and Transportation discipline at Łódź University of Technology. He authored two monographs published by Springer-Verlag (2005) and Wiley (2013) and also more than 300 papers in the peer-reviewed international journals, proceedings of the major international journals or as the book chapters. His research interests concerns stochastic mechanics, reliability analysis, computer methods in mechanics including computer algebra as well as various aspects of composite materials engineering. He worked in the research grants sponsored by Polish Committee of Scientific Research, Ministry of Science and Higher Education as well as National Science Center in Poland. He is associate editor of Mechanics Research Communications journal, editorial board member of Acta Mechanica, Journal of Composite Sciences, Composite Materials and Engineering, Advances in Environmental Research and a member of some international scientific associations like IASS & GAMM. He had postdoctoral position in Rice University (Houston, TX, USA) in academic year 1999-2000 sponsored by Foundation for Polish Science and was visiting researcher and professor in Leibniz-Institut für Polymerforschung (a year in the period 2009-2015, Dresden, Germany) as well as visiting professor in Politecnico di Milano (Italy, 2013). His research efforts have been awarded with the J. Argyris Award in computational mechanics (ECCOMAS, 2001), J.T. Oden Faculty Fellowship (UT Austin, TX, USA, 2004) and also with the Award of Polish Association for Computational Mechanics (2020). He coauthored academic textbook Technical Mechanics (2009, 2013), was a promoter of 6 doctors and more than 50 engineers at Łódź University of Technology.