



**ENGINEERING
MECHANICS
INSTITUTE**

ANNUAL REPORT 2022

<https://www.asce.org/emi> 

emi@asce.org 

Executive Summary



Sankaran Mahadevan
EMI President

Many thanks to our members and for the leadership of the EMI Board of Governors for making 2022 another successful year for EMI in a number of ways including membership growth, the launch of several high profile special collections for the Journal of Engineering Mechanics, publication of the Objective Resilience Manuals of Practice, our return to an in person conference, student competitions, and awards of several prestigious Society/EMI medals.

EMI by the Numbers

- 2155 members
- 245 EMI only members
- 24 committees
- 12 Society/EMI awards
- 23 students awards
- \$260,801 (income)
- \$229,260 (expenses)

Board of Governors

(October 1, 2021 to September 30, 2022)

- **Michele Barbato**, Ph.D., C.Eng, P.E., F.EMI, F.SEI, F.ASCE; University of California, Davis
- **Paolo Gardoni**, Ph.D., A.M.ASCE; University of Illinois at Urbana-Champaign
- **Christian Hellmich**, Ph.D., F.EMI, M. ASCE; Vienna University of Technology (TU Wien), Austria, *Treasurer*
- **Sankaran Mahadevan**, Ph.D., F.EMI, M. ASCE; Vanderbilt University; *President*
- **Arif Masud**, Ph.D., F.EMI, M.ASCE; University of Illinois at Urbana Champaign; *Vice-President*
- **Antonina Pirrotta**, Ph.D., F.EMI, A.M.ASCE; University of Palermo, Italy
- **Pol Spanos**, Ph.D., F.EMI, NAE, Dist.M.ASCE; Rice University; *Past-President*
- **Ertugrul Taciroglu**, Ph.D., F.EMI, M.ASCE; University of California at Los Angeles

EMI Staff

- **Amar Chaker**, Ph.D., M.ASCE, F.EMI, *Director*
- **Verna L. Jameson**, MPA, Aff.M.ASCE, *Senior Manager*

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Review of 2022

Journal of Engineering Mechanics

Under the guidance of the Professor Franz-Josef Ulm, Ph.D., P.E., F.E.M.I., M.ASCE, Editor of the Journal of Engineering Mechanics (JEM), a series of high profile special collections were launched:

- Instability and Failure of Nonclassical Materials and Nonlinear Structures
- Statistical Physics in Structural Mechanics
- Special Collection on Mechanobiological Engineering for Health
- Special Collection on Machine Learning Enabled Modeling and Discovery for Engineering Mechanics

The year ended with a total of 535 manuscripts submitted for possible publication in the Journal of Engineering Mechanics through December, an 11% increase over 2021's numbers. The time to first decision was 77 days for papers published in 2022 through December, and the acceptance rate through December was 24%. JEM's impact factor is 3.125.

Publications

The Objective Resilience Committee under the leadership of Mohammed M. Ettouney, P.E., F.AEI, Dist.M.ASCE, the following Manuals of Practice (MOP) were successfully published:



1. Objective Resilience: Policies and Strategies, MOP 146
2. Objective Resilience: Objective Processes, MOP 147
3. Objective Resilience: Technology, MOP 148
4. Objective Resilience: Applications, Manual of Practice 149

Conference

EMI 2022 Conference
May 31-June 3
Johns Hopkins University
Baltimore, MD, USA



EMI held a very successful EMI 2022 conference on May 31-June 3 at Johns Hopkins University in Baltimore, Maryland, with around 800 attendees. It was organized by Conference Co-Chairs, Professors Jamie Guest, Ph.D., A.M.ASCE and Somnath Ghosh, Ph.D., F.EMI, M.ASCE. This was EMI's first in person conference since its 2019 conference at Caltech. The conference program included six plenary lectures by recognized experts, and over 700 technical presentations given in up to 29 parallel sessions. A special 4-session symposium honored Prof. Ahsan Kareem (University of Notre Dame): *"The Next Frontiers in Natural Hazards Engineering: Advancing the Vision of Ahsan Kareem."*

The conference was an opportunity to hold meetings of the EMI Board of Governors, the Editorial Board of the Journal of Engineering Mechanics, and 17 EMI technical committees. The finals of 10 student paper or poster competitions were held at the conference, as well as three special events:

- An NSF sponsored grant proposal writing workshop for junior researchers interested in learning about the NSF and improving grant proposal writing skills.
- A Joint USACM Large Scale TTA – EMI Computational Mechanics Committee Career Path Panel.
- A Panel on *"Mechanics Education at a Crossroad: Vision for Evolution and Regeneration."*

The conference was also an opportunity to recognize outstanding researchers at the banquet and awards ceremony.

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Society/EMI Award Recipients

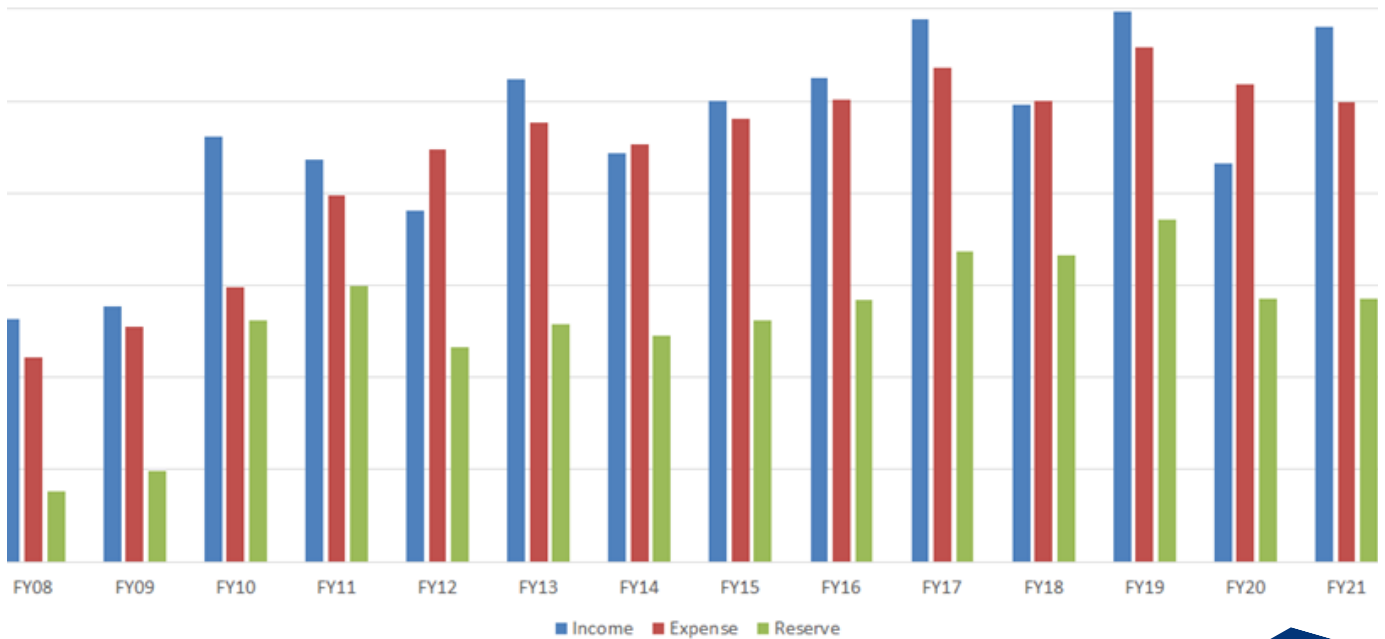
1. *Zdeněk P. Bažant Medal for Failure and Damage Prevention*
HUAJIAN GAO, PH.D., AFF.M.ASCE, Nanyang Technological University, Singapore
2. *Maurice A. Biot Medal*
JIANFU SHAO, PH.D., University of Lille, France
3. *Alfred M. Freudenthal Medal*
CHRISTIAN SOIZE, PH.D., University of MarnelaVallee, France
4. *George W. Housner Structural Control & Monitoring Medal*
SHIRLEY J. DYKE, PH.D., A.M.ASCE, Purdue University
5. *Raymond D. Mindlin Medal*
SOMNATH GHOSH, PH.D., F.EMI, M.ASCE, Johns Hopkins University
6. *Nathan M. Newmark Medal*
GIOVANNI SOLARI, P.E., F.EMI, M.ASCE, Università di Genova (posthumously)
7. *Robert H. Scanlan Medal*
BALAKUMAR BALACHANDRAN, PH.D., A.M.ASCE, University of Maryland
8. *Theodore von Kármán Medal*
ROGER GHANEM, PH.D., F.EMI, A.M.ASCE, University of Southern California
9. *EMI Leonardo Da Vinci Award*
QIMING WANG, PH.D., University of Southern California
10. *J. James R. Croes Medal*
AHSAN KAREEM, PH.D., F.EMI, NAE, DIST.M.ASCE, University of Notre Dame and
XIHAIER LUO, PH.D., AFF.M.ASCE, Brookhaven National Laboratory
11. *Walter L. Huber Civil Engineering Research Prizes*
HAO WANG, PH.D., M.ASCE, Rutgers University and
GAURAV N. SANT, PH.D., A.M.ASCE, University of California, Los Angeles
12. *Jack E. Cermak Medal*
TIMOTHY A. REINHOLD, PH.D., P.E., M.ASCE,
Insurance Institute for Business & Home Safety

Finances

EMI is required to operate within the financial model of the ASCE Institutes. As such, its main sources of income are membership dues, publications, and journal royalties, net income from conferences and donations. Its main areas of expenses are: Board and committee operations; Institute operations, staff salary, fringes, and travel.

EMI has expanded its program of activities, enhanced its program of prestigious awards, and increased its membership while keeping with the tradition of organizing excellent conferences and producing high quality publications. EMI regularly provides new content on its website and keeps its members informed through its newsletter.

EMI Financial History



What's Happening in 2023

STRATEGIC PLANNING

The Board of Governors will conduct strategic planning, aligning EMI's goals with that of ASCE's Strategic Shifts:

- **Innovate.** Define and drive creative development and renewal of futureready infrastructure.
- **Advocate.** Promote and facilitate civil engineering leadership in developing equitable solutions to global challenges.
- **Inspire.** Energize and cultivate a diverse, inclusive, and engaged civil engineering community.
- **Stimulate.** Accelerate development and adoption of emerging technologies, analytics, and systems thinking.
- **Magnify.** Amplify our collective impact through a vibrant, engaged, and growing membership.
- **Deliver.** Effectively manage our resources to provide exceptional value to members.

CONFERENCES



EMI 2023 Conference
June 6–9, Georgia Tech
Atlanta, Georgia, USA



UNIVERSITÀ
DEGLI STUDI
DI PALERMO

EMI 2023 International Conference
August 27–30, University of Palermo
Palermo, Italy

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MEMBERSHIP

The Board will strive to continue to grow membership and provide programs that offer value to EMI members. The EMI membership elects each year new members to its Board of Governors and consequently, influence the governance of the Institute. We recognize that it's through the efforts of our members that EMI continues to be successful. Therefore, we encourage you to continue to actively engage in the Institute's activities, including:

- Renewing your membership.
- Giving a voluntary contribution (which may be tax deductible) to EMI when renewing your membership.
- Encouraging your graduate students, post docs, and colleagues to join EMI and to remain members of EMI.
- Attending the EMI conferences and contributing to the technical program.
- Getting involved in the EMI technical committee activities.
- Being responsive to requests for reviews of EMI journal articles.
- Contributing articles to the Journal of Engineering Mechanics.
- Suggesting or offering webinars and short courses.
- Encouraging organizations in industry and government that are users of advanced mechanics they are familiar with to become organizational members of EMI.
- Publishing collections of papers based on presentations at sessions and mini symposia at EMI conferences in the Trends in Engineering Mechanics Special Publication series.
- Submitting short articles, pictures, videos, and announcements to the EMI newsletter and the EMI website.

Sincerely,



Sankaran Mahadevan, Ph.D., F.EMI, M.ASCE
EMI President

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