November 2025

Dr. Isaac Elishakoff, Biographical Information

Distinguished Research Professor

Fellow, European Academy of Sciences
Member, European Academy of Sciences and Arts
Foreign Member, Georgian National Academy of Sciences
Full Member, Academy of Engineering, Georgia
Fellow, American Academy of Mechanics
Fellow, American Society of Mechanical Engineers
Fellow, Japan Society of Promotion of Science

Dr. Isaac Elishakoff serves as the Distinguished Research Professor in the Department of Ocean and Mechanical Engineering at Florida Atlantic University. He also holds a courtesy appointment as a Professor in the Department of Mathematical Sciences. He was born in Kutaisi, Republic of Georgia, Europe on February 9, 1944. Professor Elishakoff holds a Ph.D. in Dynamics and Strength of Machines from the Power Engineering Institute and the Technical University. Prior to joining Florida Atlantic University, he taught for one year at Abkhazian University in Sukhumi, Republic of Georgia, and for eighteen years at the Technion-Israel Institute of Technology in Haifa. He also occupied several visiting positions.

He was an inaugural **holder of the Frank M. Freimann Chair Professorship** of Aerospace and Mechanical Engineering at the University of Notre Dame, Indiana, during academic year 1985/86; as well as the **Henry J. Massman, Jr. Chair Professorship** of Civil Engineering during the Fall Semester, 1986/87. He was a **Visiting Castigliano Distinguished Professor** at the University of Palermo, Italy, during March 1992.During the academic year 1979-80, he served as Visiting Associate Professor at the Delft University of Technology in the Netherlands. In 1987, he served as a Visiting Professor at the Naval Postgraduate School in Monterey, California. In summers of 1990 and 1991, he was a Visiting Professor of Aerospace Engineering at the Delft University of Technology, the Netherlands, where in July 2000 served as an **inaugural holder of the W. T. Koiter Chair Professorship** (Mechanical Engineering Department); in the summer of 2005 and 2010 he served a Visiting Professor at the University of Rome, "La Sapienza" and University of Bologna, Italy. In the summer of 2007, he served as a visiting Professor of Civil Engineering at the Ariel University Center, Israel. During December 1992 and January 1993, and December 2006 to February 2007, he served as a Fellow of the Japan Society for the Promotion of Science at the Universities of Tokyo and Kyoto, respectively. During April/May 2007, December 2009, and January 2010, he served as a Visiting **Eminent Scholar** at the Beijing University of Aeronautics and Astronautics, People's Republic of China. In December 2013 and January 2014, he served as a Visiting Eminent Scholar at Hunan University and a Visiting Professor at the National University of Defense Technology in China. In the Spring semester of 2014, he served as a Distinguished Professor at the Technion in Haifa, Israel. In summer 2015, he served as a **Distinguished Visiting Fellow of the Royal Academy of Engineering** at the University of Southampton, UK. In June 2019, he served as the **S.P. Timoshenko Scholar** at Stanford University. In 2023, he served as a Theodore von **Kármán** Fellow at the University of Aachen, Germany.

Elishakoff is a recipient of the Bathsheva de Rothschild prize (1973), as well as Fellowships from the German Academic Exchange Office and the National Technical Foundation of the Netherlands. He was presented with special medallions of the University of Notre Dame and of the University of Tokyo. Between 1996 and 2002, he was appointed as an **ASME Distinguished Lecturer**.

In 2016, he was awarded the **ASME Worcester Reed Warner Medal in literature** "For seminal contributions to the permanent literature of engineering research through highly praised books on probabilistic theory of structures, elastic stability, the stochastic finite element method, safety factors and reliability of composite structures; and numerous breakthrough research papers over the past 40 years".

In 2019, he was awarded the **William B. Johnson Inter-Professional Founders Award,** "In recognition for a lifetime achievement of accomplishments in applied mechanics research and instruction which affect worldwide advancement of business, culture, and learning", by the Engineers Council.

In 2021, he was awarded the **Blaise Pascal Medal in the Engineering** field by the European Academy of Sciences (Brussels, Belgium), recognizing his "outstanding and demonstrated personal contribution to science and technology and promotion of excellence in research and education." He was elected as a Fellow of the European Academy of Sciences.

In 2025, he was awarded the ASCE, Engineering Mechanics Institute (EMI) **Masanobu Shinozuka Medal** for "seminal contributions to random vibrations, reliability, and nonlinear buckling simulation of shells."

Likewise, in 2025, he was awarded the **J.S. Rao Medal** for "great contributions to vibration engineering and technologies" from India.

In 1991, Dr. Elishakoff was elected as a Fellow of the **American Academy of Mechanics** for outstanding contributions to random vibrations of structures and pioneering contributions to uncertainty modeling. In 2010, he was named a **Foreign Member of the Georgian National Academy of Sciences.** In 2011, he was elected a **Member of the European Academy of Sciences and Arts (Salzburg, Austria).** In 2011, he was also named a **Fellow of ASME**. **He was also elected as a Full member of the Georgian Academy of Engineering.** His research activities were supported at various times by the NSF, NASA Kennedy Space Center, NASA Langley Research Center, NASA Glenn Research Center, ICASE-NASA Institute for Computer Applications in Science and Engineering, and the National Center for Earthquake Engineering Research.

Dr. Elishakoff has made pioneering contributions in several areas of civil, mechanical and aerospace engineering: 1. random vibrations, with special emphasis on continuous, homogeneous and composite beams, plates and shells and associated effects of refinements in theories and of cross- correlations; 2. free vibration of structures with the generalization of Bolotin's dynamic edge effect method, free of degeneracy property characteristic to the original method;

3. nonlinear buckling of structures, with a new method to combine the results of experimental measurements of shell imperfections to predict the theoretical knockdown factors associated with different manufacturing processes, thus introducing, for the first time in the literature, the imperfection sensitivity concept into design; 4. structural reliability with elucidation of errors associated with various low-order approximations andhuman errors; 5. work on a non-probabilistic theory for treating uncertainty in mechanics,namely, optimization and anti-optimization under uncertainty and, especially, its combination with stochastic modeling; 6. dynamic stability of structures with imperfections, in elastic or viscoelastic setting; 7. random vibrations and reliability of composite structures with attendant first book worldwide; 8. development of the improvedfinite element method for stochastic structures which has a non-perturbative nature; 9. stochastic linearization; 10. computerized symbolic algebra; 11. co-authored the first and only monograph worldwide on convex modeling of uncertainty; 12. Co-authored the first and only monograph worldwide on the reliability of composite structures;

13. co-authored the first and only monograph on acoustically excited structures; 14. Co-authored the first and only monograph on uncertain instability problems; 15. authored the first and only monograph on exact solutions for inhomogeneous structures; 16. authored the first and only monograph in English on safety factors; 17. authored the first and only monograph on the solution of numerous eigenvalue problems, for the first time after Leonhard Euler's contribution in the 18th century 18. co-authored the first and only monograph on optimization and anti-optimization; 19. Co-authored the first monograph on functionally graded material structures; 20. Co-authored the first monograph on carbon nanotubes and nano-sensors; 21. Authored the first and only monograph on the Timoshenko-Ehrenfest beam theories in the past 100 years that this theory exists.

Dr. Elishakoff has published over 620 original papers in leading national and international journals and conference proceedings. His publications appeared mostly in ASME Journal of Applied Mechanics; Proceedings of the Royal Society of London; AIAA Journal; International Journal of Solids and Structures; Journal of Sound and Vibration; Journal Mathematical Problems in Engineering; Acta Mechanica; Journal of Composite Structures; Computer Methods in Applied Mechanics and Engineering; Computers and Structures; Journal of Acoustical Society of America; Chaos, Solitons & Fractals; Meccanica; Philosophical Transactions of the Royal Society, and many others.

In addition to extensive research, he has developed numerous undergraduate and graduate courses, including, apparently, the first engineering course worldwide, "Design for Homeland Security."

Dr. Elishakoff is General Advisory Editor for publications on Vibration, Stability and Reliability for the series *Studies in Applied Mechanics* and *Developments in Civil Engineering* of Elsevier Science Publishers, Oxford, England, since 1988. He is on the Advisory Editorial Board of Springer book series in *Risk Engineering*. In 2012, he was appointed as the Scientific Editor of a series in *Mechanical Engineering and Solid Mechanics* by ISTE-Wiley Publishers, London.

He serves as the book review editor of the "Journal of Shock and Vibration"; he is or

was Associate Editor of four journals: (1) International Journal of Mechanics of Machines and Structures; (2) Applied Mechanics Reviews of the ASME; (3) Interdisciplinary Journal of Nonlinear Sciences "Chaos, Solitons and Fractals" of Pergamon Press; (4) Mechanics-Based Design of Structures and Machines of Taylor and Francis. Additionally he is or was on editorial boards of following thirteen journals: (1) Journal of Sound and Vibration; (2) The Shock and Vibration Digest; (3) Trends in Acoustical Research; (4) The Uncertainties in Engineering Mechanics Journal; (5) International Journal of Structural Stability and Dynamics; (6) Ocean Engineering Systems; (7) International Journal of Safety and Homeland Security;(8) International Journal of Reliability and Safety; (9) International Applied Mechanics, (10) International Journal of Fuzzy Computation and Modeling; (11) Probabilistic Engineering Mechanics; (12) Journal of Symbolic Computation; (13) Computers & Structures.

In 1986, Dr. I. Elishakoff co-organized the (a) European Mechanics Colloquium on "Refined Dynamical Theories of Beams, Plates and Shells, and Their Applications" in Kassel, Federal Republic of Germany; (b) in 1990 he co-organized the Second International Conference on Stochastic Dynamics; 1990, he co-organized the Symposium on "Symbolic Computations and Their Impact on Mechanics" at the 111th Winter Annual Meeting of the ASME, in Dallas, TX; (d) In 1992, he co-organized a joint FAU-University of Federal Armed Forces-Hamburg (FRG) Conference on "Recent Developments in Solid Mechanics";(e) In 1996 he organized an "International Conference on Uncertain Structures" in Miami and Western Caribbean;(f) In 1997 he coordinated a special course, "Uncertainty in Engineering Probability, Fuzziness and Anti-Optimization" in the International Centre for Mechanical Sciences (CISM), in Udine, Italy, within its Hertz Session. He also has organized numerous sessions at national and international meetings worldwide, including the sessions at the ASME meetings. (g) In 2001 he co-organized a special course, "Stability of Structures: Modern Problems and Unconventional Solutions" at CISM, Udine, Italy, Europe; (h) In 2005, he organized a special course "Mechanical Vibrations: Where Do We Stand?" at CISM, Udine, Italy, Europe; (i) In 2011 he co-organized a special course in "Nondeterministic Mechanics", at CISM, Udine, Italy, Europe.

Dr. Elishakoff has lectured at about 200 national and international meetings and seminars, including 63 invited, plenary or keynote lectures. He has also lectured worldwide in Europe, North America, South America, the Middle East, and the Far East.

Dr. Elishakoff is the author or co-author of the following 20 books and 14 edited volumes:

Elishakoff I., *Probabilistic Methods in the Theory of Structures,* Wiley-Interscience, New York, **1983**, XII + pp. 489; ISBN 0-471-87572.

Elishakoff, I., and Richard H. Lyon (editors), *Random Vibration-Status and Recent Developments*, Elsevier Science Publishers, Amsterdam, **1986**, XX + pp. 565; ISBN 0-444-42665-5.

Elishakoff I., and Horst Irretier, (editors), *Refined Dynamical Theories of Beams, Plates and Shells* and *their Applications*, Springer Verlag, Berlin, **1987**, XII + pp. 436; ISBN 3-540-17573-3

Elishakoff I., Johann Arbocz, Charles D. Babcock, Jr., and Avinoam Libai, (editors),

Buckling of Structures-Theory and Experiment, Elsevier Science Publishers, Amsterdam, **1988**, XX + pp. 449; ISBN 0-444-70474-4.

S. T. Ariaratnam, Gerhart Schuëller and I. Elishakoff, (editors), *Stochastic Structural Dynamics-Progress in Theory and Applications*, Elsevier Applied Science Publishers, London, **1988**, XX + pp. 375; ISBN 1-85166-211-1.

Chuh Mei, Howard F. Wolfe and I. Elishakoff, (editors), *Vibration and Behavior of Composite Structures*, ASME Press, New York, **1989**, V + pp. 73; ISBN 0-7918-0397-X.

Yakov Ben-Haim and I. Elishakoff, *Convex Models of Uncertainty in Applied Mechanics,* Elsevier Science Publishers, Amsterdam, **1990**, XVII + pp. 221; ISBN 0-444-88406-8.

Fabio Casciati, I. Elishakoff and J. Brian Roberts, (editors), *Nonlinear Structural Systems under Random Conditions*, Elsevier Science Publishers, Amsterdam, **1990**, pp. 386; ISBN 0-444-88803-9.

Ahmed K. Noor, I. Elishakoff and Greg Hulbert, (editors), *Symbolic Computations and Their Impact on Mechanics*, ASME Press, New York, **1990**, XV + pp. 376; ISBN 0-7918-0598-0.
David Hui and I. Elishakoff, (editors), *Impact and Buckling of Structures*, ASME Press, New York, **1990**, V + pp. 99; ISBN 0-7918-0589-1.

Yukweng (Mike) Lin and I. Elishakoff, (editors), *Stochastic Structural Dynamics 1-New Theoretical Developments*, Springer, Berlin, **1991**, XIII + pp. 346; ISBN 3-540-54167-5.

Elishakoff I. and Y. K. Lin, (editors), *Stochastic Structural Dynamics 2 - New Applications*, Springer, Berlin, **1991**, XIII + pp. 351; ISBN 3-540-54168-3.

Gabriel Cederbaum, I. Elishakoff, Jacob Aboudi and Liviu Librescu, *Random Vibration and Reliability of Composite Structures,* Technomic, Lancaster, **1992**, XIII + pp. 191; ISBN 0-87762-865-3.

Elishakoff I., Yukweng Lin and Liping Zhu, *Probabilistic and Convex Modeling of Acoustically Excited Structures,* Elsevier Science Publishers, Amsterdam, **1994**, VIII + pp. 296; ISBN 0-444-81624-0

Elishakoff I., (editor), *Whys and Hows in Uncertainty Modeling*, Springer, Vienna, **1999**, VII + pp. 393, ISBN 3-211-83155-X.

Elishakoff I, *Probabilistic Theory of Structures,* Dover Publications, Mineola, New York, **1999**, XVI + pp. 492; ISBN 0-486-40691-

Elishakoff I., Yiwei Li and James H. Starnes, Jr., *Non-Classical Problems in the Theory of Elastic Stability*, Cambridge University Press, **2001**, XVI +pp.336; ISBN 0-521- 78210-4.

Alexander P. Seyranian and I. Elishakoff (editors), *Modern Problems of Structural Stability,* Springer, Vienna, **2002**, III + pp. 394, ISBN 3-211-83697-7.

Elishakoff I. and Yongjian Ren, *Large Variation Finite Element Method for Stochastic Problems*, Oxford University Press, **2003**, IX + pp. 260; ISBN 0-19-852631-8.

ElishakoffI I., *Safety Factors and Reliability: Friends or Foes?* Kluwer Academic Publishers, Dordrecht, **2004**, X + pp. 295; ISBN 1-4020-1779-0.

Elishakoff I., *Eigenvalues of Inhomogeneous Structures: Unusual Closed-Form Solutions of Semi-Inverse Problems,* CRC Press, Boca Raton, **2005**, XIV + pp. 729; ISBN 0-8493-2892-6.

Elishakoff I. (ed.), *Mechanical Vibration: Where Do We Stand?,* Springer, Vienna, **2007,** IV + pp. 488, ISBN 3-211-68586-3.

Elishakoff, I., and Makoto Ohsaki, *Optimization and Anti-Optimization of Structures underUncertainty*, Imperial College Press, London, **2010**, XV+ pp. 402; ISBN-13. 978- 1-84816-
477-2.

Elishakoff I., D. Pentaras, K. Dujat, C. Versaci, G. Muscolino, J. Storch, S. Bucas, N. Challamel, T. Natsuki, Y.Y. Zhang, C.M. Wang and G. Ghyselinck, *Carbon Nanotubes and Nano Sensors: Vibrations, Buckling, and Ballistic Impact,* ISTE-Wiley, London, **2012**, XIII+pp.421; ISBN-978-1-84821-345-6.

Elishakoff I. and C. Soize (editors), *Non-Deterministic Mechanics*, Springer, Vienna, **2012**, II+ pp. 356, ISBN 978-3-7091-1305-9.

Elishakoff I., *Resolution of Twentieth Century Conundrum in Elastic Stability,* World Scientific/Imperial College Press, Singapore, **2014**; pp.333, ISBN 978-981-4583-53-4.

Elishakoff I., D. Pentaras and C. Gentilini, *Mechanics of Functionally Graded Material Structures*, World Scientific/Imperial College Press, Singapore; pp. 323, ISBN 978-981-4656-58-0, **2015**.

Elishakoff I., *Probabilistic Methods in the Theory of Structures: Random Strength of Materials, Random Vibration, and Buckling*, World Scientific, Singapore, in press, ISBN 978-981-3149-84-7, **2017**.

Elishakoff I., *Probabilistic Methods in the Theory of Structures: Solution Manual to Accompany Probabilistic Methods in the Theory of Structures: Problems with Complete, Worked Through Solutions,* World Scientific, Singapore, in press, ISBN 978-981-3201- 10-1, **2018**.

Elishakoff I., *Handbook on Timoshenko-Ehrenfest Beam and Uflyand-Mindlin Plate Theories*, World Scientific, Singapore, ISBN 978-961-3236-51-6, **2020**

Elishakoff, I., *Dramatic Effect of Cross-Correlations in Random Vibrations of Discrete Systems,Beams, Plates, and Shells,* Springer Nature, Switzerland, ISBN 978 3-030-40394-2, **2020.**

Vladimir Raizer and Elishakoff I., *Philosophies of Structural Safety and Reliability,* Taylor & Francis, Boca Raton, ISBN 9781003265993, **2022.**

Elishakoff I., *Fair Share: 111 Problems from Ahmes to Aumann,* Springer Nature Switzerland, ISBN978-3-031-40418-4, 2024.

Elishakoff I., *Multifaceted Uncertainty Quantification,* Berlin: De Gruyter, ISBN 978-3111354217, 2024.

Elishakoff I., *Follower Forces in Engineering and Science: Fact or Fantasy?* Singapore, World Scientific, in press, 2026.

Elishakoff I., *Stephen P. Timoshenko in Perspective,* Singapore, World Scientific, in press, 2026.

In 2009, a special "Symposium on Stability, Structural Reliability, and Random Vibrations in Honor of Professor Isaac Elishakoff" was organized during the ASME Congress and Exposition in Lake Buena Vista, Florida, with 3 keynote lectures and 18 lectures by authors representing 11 countries. A special issue of the *International Journal of Structural Stability and Dynamics* was dedicated to I. Elishakoff in 2012.

In 2021, Professors Noel Challamel (University of South Brittany, France), Julius Kaplunov (University of Keele, United Kingdom) and Izuru Takewaki (Kyoto University, Japan) edited three books titled, ***Modern Trends in Structural and Solid Mechanics,*** in honor of Isaac Elishakoff, with volumes

Vol. 1 *Statics and Stability,*

Vol. 2 *Vibrations,*

Vol. 3*, Non-Deterministic Mechanics,*

http://www.iste.co.uk/book.php?id=1769
http://www.iste.co.uk/book.php?id=1770
http://www.iste.co.uk/book.php?id=1771

published by ISTE-Wiley Publishers, in London, comprising 34 contributions from 12 countries.