

### G rard A. Maugin

The professor G rard A. Maugin passed away on September 22, 2016 as a result of a serious illness. He had been for a long time, since 2002, the member of the Editorial Board of Theoretical and Applied Mechanics, as well as the Honorary member of the Serbian Society of Mechanics, since 2005.

The scientific community of mechanics and applied mathematics in Serbia had lost our very dear and sincere friend and great scientist.

G rard A. Maugin was born on December 2, 1944 in Angers, Western France. He studied mechanical engineering and mathematics in Paris as well as space engineering and aviation engineering in Princeton, USA. He earned his PhD degree from Princeton University in 1971 and received his doctorate in mathematics (Doctorat d'Etat) at the Pierre and Marie Curie University Paris 6 (UPMC) in 1975. G rard A. Maugin held honorary doctorates from the Technical University of Darmstadt and the Aristotle University of Thessaloniki.

His career with Centre National de la Recherche Scientifique (CNRS) began in 1972 and included positions from Attach  to Directeur de Recherche – the final position with rank of Full Professor while teaching graduate courses at UPMC. Professor Maugin also taught and directed a team at Laboratoire de M canique Th orique, UPMC since 1985. After its name change to Laboratoire de Mod lisation en M canique, he headed the laboratory from 1999 to 2006. G rard A. Maugin was the founder and first Director (later Director of Research) of Institut Jean le Rond d'Alembert that gathered both theoretical and experimental studies in mechanics, thermodynamics, acoustics and energetics. He also taught graduate courses in the same institution. Since 2010 he was Emeritus in Service. He intertwined mechanics and physics to construct new mathematical models, for wide region of dynamic processes.

A very short review of his accomplishments follows:

#### The key areas

- Relativistic continuum mechanics and waves
- Electrodynamics of continua,
- Electro-magneto-mechanical interactions



- Mechanics of deformable solids with ferroic states (ferromagnetics, ferroelectrics, etc)
- Thermomechanics of continua with internal state variables
- Linear and nonlinear surface waves on deformable structures
- Nonlinear localized waves in microstructured solids
- Eshelbian Mechanics of continua on the material manifold
- Geometry and thermomechanics of material defects
- Dynamic processes in “dynamic” materials
- Lighthill–Whitham wave mechanics
- Mechano-biology of some tissues (growth of long bones)
- Meta-materials
- Epistemology
- History of continuum mechanics (Piola, Helmholtz, Duhem)

### Scientific Distinctions

- International NASA Fellow (USA): 1968–1970 [by international competition]
- Medal of CNRS for Physical Sciences in Engineering, Paris, 1977
- Prize of Mechanics (Doisteau-Blutet) of the French Academy of Sciences, Paris, 1982
- Fellow of the Wissenschaftskolleg zu Berlin, Berlin, Germany: Academic year 1991–1992 (German version of the Institute for Advanced Studies of Princeton; no duties during tenure)
- Corresponding Member of the Academy of Arts and Letters of Messina (Accademia dei Peloritani e Pericolanti): 1993
- Member of the Polish Academy of Sciences (P.A.N): elected May 1994
- Innovative Science Professor, Kyoto University, Japan, September 1997–March 1998
- Honorary Title: “Professor honoris causa in Mechanics”, Lomonosov State University of Moscow, Russia (by the Council of the LMSU, November 2000, Ceremony In Moscow, January 23, 2001.
- Honorary title: “Dr honoris causa in Natural Sciences”, Technical University of Darmstadt, Germany, September 2001.
- Max-Planck Prize (conferred by Max Planck Society and A. von Humboldt Foundation), Germany, November 2001.
- Member of the Scientific Committee of the International Center for Nonlinear Studies, St Petersburg, Russia, since 1992.
- Elected Member of National Committee of Research (Section: Mechanics, Acoustics and Energetics), CNRS, Paris, 1995–2000, 2000–2004.
- Member of Department Council, Directorate of Engineering Sciences, CNRS, Paris, 1995–2000, 2000–2004.
- Member of the Scientific Council of the Centre National de la Recherche Scientifique, Paris (CNRS): 1997 to September 2001. (Representative of Physical Sciences for Engineering).
- Nominated Member (by French Academy of Sciences) of the French Committee “Haut Comité de Mécanique” (“Think tank” gathering 12 Academics and heads of Industrial companies concerned with national development of all fields of mechanics at both education and application levels): January 1996
- Elected Foreign member of the Estonian Academy of Sciences, 2002.
- Eringen medal of the Society of Engineering Science, USA (2003) (highest distinction given by this society). Colloquium in my honour: at Ann Arbor, MI, USA (2003), volume of presentations published as a triple issue of the Philosophical Magazine, 2005).
- Honorary member of the Serbian Society of Mechanics, Novi Sad, 2005

- Honorary title: Dr honoris causa in Physics, Aristotelian University, Thessaloniki, Greece, 2009
- Honorary title: Fellow of ASME (American Society of Mechanical Engineers, New York, USA), 2009.

### **Books**

- Nonlinear electromechanical effects and applications, World Scientific 1985
- Continuum mechanics of electromagnetic solids, North Holland 1988
- with A. C. Eringen: Electrodynamics of continua, 2 volumes, Springer Verlag 1990
- Nonlinear electromechanical couplings, Wiley 1992
- Material inhomogeneities in elasticity, Chapman and Hall 1993
- The thermo-mechanics of nonlinear irreversible behaviors: an introduction, World Scientific 1999
- Nonlinear waves in elastic crystals, Oxford University Press 1999
- with Arkadi Berezhovskii, Jüri Engelbrecht, Numerical simulation of waves and fronts in inhomogeneous solids, World Scientific 2008
- Editor with Holm Altenbach, Vladimir Erofeev, Mechanics of Generalized Continua, Springer Verlag 2011
- Configurational forces, Chapman and Hall 2011
- Continuum Mechanics through the twentieth century, Springer 2013

### **Memberships in Scientific Societies**

- Society of Natural Philosophy (SNP), USA
- Society of Engineering Science (SES), USA, Life member
- Society for Industrial and Applied Mathematics (SIAM), USA
- American Physical Society (APS), USA
- American Mathematical Society (AMS), USA
- Acoustical Society of America (ASA), USA
- Gesellschaft für angewandte Math. und Mech. (GAMM), Germany
- International Society for the Interaction of Mathematics and Mechanics (ISIMM): Member of the Executive Committee 1986–1990, 1997–2001
- Société Française d’Acoustique (SFA), France
- Association Française de Mécanique (AFM), France
- EUROMECH Society (European Society of Mechanics)

### **Memberships in Editorial Boards**

#### **Scientific journals.**

- International Journal of Engineering Science (IJES), Pergamon Press, USA, from 1976 to December 1995.
- Wave Motion, North-Holland, USA, since 1986
- Journal of Technical Physics, Polish Academy of Science
- International Journal of Applied Electromagnetics and Mechanics (IJAEM); one of its founders in 1990; presently Regional Editor (Europe, USA)
- Applied Mechanics Reviews (A.S.M.E., USA): Associate Editor since 1985
- Journal of Non-equilibrium Thermodynamics (JNET), de Gruyter, Germany, Berlin
- Egyptian Journal of Mathematics, Cairo, Egypt
- Archives of Applied Mechanics (Formerly Ingenieur-Archiv), Springer-Verlag, Germany
- Theoretical and Applied Mechanics, Belgrade, Serbia
- Archives of Mechanics (Polish Academy of Science, Warswa)

- ARI, Springer-Verlag, Berlin, Associate Editor since its creation 1997
- Proceedings of the Estonian Academy of Science, Tallinn, Estonia since 1997.
- Mechanics Research Communications (International, Pergamon). One of the five Editors (since July 1st 1999)
- Revue de Mécanique Appliquée et Théorique (Morroco)

#### **Scientific Books.**

- Consulting editor: Springer-Verlag, Heidelberg, Germany John Wiley, UK and USA Kluwer Academic Publishers, Dordrecht, The Netherlands Oxford University Press, UK
- Series Editor: CRC Series on Continuum Modelling and Discrete Systems, CRC, Boca Raton, Florida, USA
- Applied Electromagnetics and Mechanics, Elsevier, then I.O.S. Press, The Netherlands

#### **Author of Foreword in the following volumes**

**(in addition to the foreword in the above-mentioned edited volumes)**

- S. Cleja-Tigoiu, V. Tigoiu (Eds.), *Geometry, Continua and Microstructures*, 5<sup>th</sup> International Seminar, Sinaia, Romania, 2001, Editura Academiei Romane, Bucarest, 2002, p. 7.
- M. Micunovic (Ed.), *Geometry, Continua and Mechanics*, 6<sup>th</sup> International Seminar, Belgrade, Sept. 2002, Theoretical and Applied Mechanics, **28–29** (2002), 221–234.
- J.F. Ganghoffer, *Tenseurs, Variations et Milieux Continus*, Editions Ellipses, Collection “Technosup”, Paris (2003), pp.3–4.

#### **Hommages to G. A. Maugin**

- W. Muschik (Germany), “Gérard A. Maugin, 60 years young”, *J.Non-Equilib. Thermodynamics* **29** (2004), 205–208.
- D. Lagoudas (USA), P. Steinmann (Germany), E. Busso (UK) (Guest Editors) of Special issue “Recent Advances in Theoretical Mechanics” (in Honour of G. A. Maugin), *Philosophical Magazine*, **85**(33–35) (2005), 3871–4413 (540 p., Nov.–Dec. 2005, 26 contributions from 11 countries).

#### **Instead of Conclusion**

The world community has lost an excellent scientist who beside his main research interests was also studying philosophy and history of science. His numerous writings were deep and well elaborated and have already become classical in the field.

When looking at the list of publications, books, scientific accomplishments of the professor Gerard A. Maugin we must feel admiration. His deep understanding of physics supported by excellent mathematical knowledge resulted into an impressive list of more than 500 papers in prestigious international scientific journals (refereed), 11 scientific books as author (at Springer, CUP, OUP, World Scientific, Chapman, Elsevier), 16 scientific books as editor, 8 invited long contributions in volumes, (Theoretical continuum mechanics; applied mathematics) and circa 200 papers (not abstracts) in published proceedings of conferences.

Really comparable with the greatest mathematicians put him into a smallest circle of most advanced applied mathematicians of recent times.

However, his interest in history and philosophy of science, a harmonic family life with his dearest wife Eleni, simple and charming nobility, gentle behavior and respect for all the people together were even more astonishing for us.

During his first scientific visit to Belgrade University in 1977 and all the time until his untimely death, work and contributions to our journal “Theoretical and Applied Mechanics” of professor Maugin were precious. All of us and all the others who had a privilege to know him and share with him his warm personality and exceptional wisdom, will dearly miss him, but will always remember him with admiration and respect.

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