

## Curriculum Vitae of Francesco MAINARDI (2015)

### Francesco MAINARDI

Born at Lugo (Ravenna), Italy, on 29 December 1942.

Married with two children, Resident in Bologna.

### Free Professor of Mathematical Physics c/o

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URL: <http://www.fracalmo.org/mainardi/index.htm>

<http://www.unibo.it/docenti/francesco.mainardi>

Profile: <http://scholar.google.com/scholar?hl=en&lr=&q=f+mainardi>

### DEGREES

- Master Degree in Theoretical Physics in 1966, University of Bologna
- Diploma in Advanced School in Physics in 1971, University of Bologna (PhD was not available in Italy in those times!)

### POSITIONS

- Lecturer of Rational Mechanics, University of Ancona, 1971-73
- Assistant Professor of Mathematical Physics, University of Bologna, 1973-1982
- Associate Professor of Mathematical Physics, University of Bologna, 1983-2013
- 2013- Retired Professor for age-limits (1Nov 2013) with contract for teaching.

AWARDS: Mittag-Leffler Award, July 2014. for a cumulative contribution to the field of Fractional Derivatives and Applications.

See <http://www.icfda14.dieei.unict.it/awards.html>

### ASSOCIATIONS and MEMBERSHIPS

- National Group of Mathematical Physics (GNFM-INdAM)
- National Institute of Nuclear Physics (INFN), Bologna Section (Theoretical Group)
- Italian Society of Physics (SIF)

- Italian Union of Mathematics (UMI)
- Italian Society of Industrial and applied Mathematics (SIMAI)
- Society of Industrial and Applied Mathematics (SIAM)  
(Group of Orthogonal Polynomials and Special Functions–OPSF)

## TEACHING ACTIVITY

Since 1975 he has given courses on Mathematical Physics for ungraduated and graduated students in Physics of the University of Bologna. For the recent activity, see <http://www.unibo.it/docenti/francesco.mainardi>. He has supervised several Master and PhD thesis in Mathematical Physics. For a partial list updated to 2002 on the occasion of the celebration of his 60-th birthday see <http://www.fracalmo.org/mainardi/FM60/index.html>

## REASEACH ACTIVITY

### RESEARCH INTRESTS

Asymptotic methods in applied mathematics, special functions and fractional calculus, continuum mechanics (solids and fluids) with special regard to linear viscoelasticity, mathematical aspects of wave propagation and diffusion, stochastic models in statistical physics.

### SCIENTIFIC PUBLICATIONS

He is author of several papers (~150) on Applied Mathematics, Continuum Mechanics, Wave Motion, Diffusion, Special Functions, Fractional Calculus, Stochastic Processes, published in international refereed journals and books.

The complete list of publications (papers and books) is enclosed.

The impact of his publications can be seen in GOOGLE-SCHOLAR, see the citations:

<http://scholar.google.com/scholar?hl=en&lr=&q=f+mainardi>

and the profile with H-index >50 (November 2015). A number of papers have more than 300 citations. Because of this high H-index he is included in the first positions in the list of TOP ITALIAN SCIENTISTS as far as the area of MATHEMATICS-PHYSICS (Macro-area Mathematics) is considered, see

[http://www.topitalianscientists.org/Top\\_italian\\_scientists\\_VIA-Academy.aspx](http://www.topitalianscientists.org/Top_italian_scientists_VIA-Academy.aspx)

## BOOKS

6. R. Gorenflo, A.A Kilbas, F. Mainardi and S.V. Rogosin:  
"Mittag-Leffler Functions. Related Topics and Applications",  
Springer, Berlin (2014), pp. XII+ 420. ISBN 978-3-662-43929-6,  
Springer Monographs in Mathematics. See:  
<http://www.springer.com/mathematics/analysis/book/978-3-662-43929-6>

5. S.V. Rogosin and F. Mainardi  
"The Legacy of A.Ya. Khintchine's Work in Probability Theory",  
Cambridge Scientific Publ. Cambridge (2011), pp 275.  
ISBN 978-1-904868-65-1. See:  
<http://www.cambridgescientificpublishers.com/>

4. F. Mainardi: "Fractional Calculus and Waves in Linear Viscoelasticity",  
Imperial College Press, London (2010), pp. 340,  
ISBN 978-1-84816-329-4. 2nd edition in preparation. See:  
<http://www.worldscientific.com/worldscibooks/10.1142/p614>

3. A Guran, A. De Hoop, D. Guicking and F. Mainardi (Editors):  
"Acoustic Interactions with Submerged Elastic Structures: Part III:  
Acoustic Propagation and Scattering, Wavelets and Time Frequency  
Analysis" (A Herbert Uberall Festschrift Volume, with a foreword by  
Hans A. Bethe), World Scientific, Singapore (2001), pp. 422,  
ISBN 981-02-2950-X. [Vol. 5 on the Series B on Stability, Vibration and  
Control of Systems, Series Editors: Ardeshir Guran & Daniel J. Inman]

2. A. Carpinteri and F. Mainardi (Editors):  
"Fractals and Fractional Calculus in Continuum Mechanics",  
published by Springer Wien New York (1997) in the series of "CISM  
Courses and Lectures" (No 378)., pp. 348, ISBN 3-211-82913-X  
This book contains selected lectures held at the CISM Course organized  
by the Editors, held in Udine (Italy) from 23 to 27 September 1997,  
entitled "Scaling Laws and Fractality in Continuum Mechanics".  
The book includes the survey lessons by Gorenflo-Mainardi [62] and  
Mainardi [63].

1. F. Mainardi (Editor): "Wave Propagation in Viscoelastic Media", Pitman, London (1982) in the series of "Pitman Research Notes in Mathematics" (No 52), pp. 272, ISBN 0-273-08511-5. It contains selected lectures given at the European Mechanics Colloquium (Euromech 127), held in Taormina (Sicily, Italy) on April 1980.

## EDITORIAL BOARDS AND REFEREE

He is in the Editorial Board of Fractional Calculus and Applied Analysis (De Gruyter) and of Chaos, Solitons and Fractals (Elsevier).

He is a referee of several qualified journals, including Physica A, Physica D, J. Math. Physics, J. Statistical Physics, J Appl. Maths and Comput., Appl. Maths and Comp., J. Physics A Math-Gen, etc..

## VISITING for TEACHING and RESEARCH ACTIVITY ABROAD

He has spent some periods for scientific collaboration and teaching activity in several qualified Institutions outside Italy including:

- UK: Dept. of Applied Mathematics & Theoretical Physics, Cambridge; Dept. of Theoretical Mechanics, Nottingham.
- GERMANY: Dept. Applied Mechanics, Karlsruhe; Dept. Mathematics and Computer Science, Free University, Berlin.
- HOLLAND: Dept of Applied Mathematics, Twente.
- USA: Courant Institute of Math. Sciences, NYU, New-York; Scripps Institute of Oceanography, UCSD, San Diego; Division of Applied Math, Brown University, Providence RI.
- CANADA: Dept. of Mathematics, UA, Edmonton; Dept. of Oceanography, UBC, Vancouver.
- CHINA: Dept of Mathematics, University of Shanghai; School of Physics, Shandong University, Jinan.
- INDIA: Indian Institute of Science, Bangalore; Dept. Mathematics, Pune; International Centre of Mathematical Sciences, Pala-Kerala.
- AUSTRALIA: Dept of Mathematics and Statistics, University of Sydney.
- BRASIL: Dept of Applied Mathematics, University of Campinas.
- SOUTH AFRICA: School of Physics, University of KwaZulu-Natal, Durban.

## ORGANIZATION OF CONFERENCES AND ADVANCED SCHOOLS

To promote the research in fields of wave propagation he has organized, as a Chairman, 3 European Mechanics Colloquia :

1. the Euromech 127 on Wave Propagation in Viscoelastic Media, held in Taormina on April 14-18, 1980 (co-chairman G. Pallotti),
2. the Euromech 179 on Waves in Fluid Filled Tubes, held in Rimini on June 18-22, 1984 (co-chairman H. Buggisch),
3. the Euromech 240 on Dispersive Waves in Dissipative Fluids, held in Bologna in 1988, August 30 - September 2 (co-chairman D.G. Crighton). He has coordinated (with A. Carpinteri)
4. the Advanced School: Scaling Laws and Fractality in Continuum Mechanics (A survey of the methods based on Renormalization Group and Fractional Calculus) held at CISM (Centre International des Sciences M\ecaniques), Udine (Italy), from 23 to 27 September 1996 providing lecture notes based on his lessons.

### INVITED MINI-COURSES for PhD and POST-DOC students

1. A Mini-course (with R. Gorenflo) on Fractional Calculus at MaPhySto (Mathematical Physics and Stochastics) Center, at Mathematical Department, University of Aarhus (Denmark) on January 2000.
2. A Mini-course on Fractional Calculus at the international School SERC (Science and Engineering Research Council), Centre for Mathematical Sciences, in Pala Campus, Kerala, India on May 3-7, 2010, see <http://www.cmsintl.org>
- 3 A Mini-course on Fractional Calculus at the Dept of Applied Mathematics, University of Campinas, Brasil, 6-17 September 2010.
4. A Mini-course on Fractional Calculus at the international School SERC (Science and Engineering Research Council), Centre for Mathematical Sciences, in Pala Campus, Kerala, India on May 1-4, 2012, see <http://www.cmsintl.org>
- 5 . A Mini-course on Fractional Calculus at the International XXXVII School on Mathematical Physics in Ravello (Italy), September 17-22, 2012, see <http://people.ciram.unibo.it/~ruggeri/ravello2012.html> in the WEB site of INdAM (National Institute of High Mathematics): <http://www.altamatematica.it/gnfm/node/12>
6. A Mini-course on Fractional Calculus at the Dept of Applied Mathematics, University of Campinas, Brazil, 5-19 September 2013.

7. A Mini-course on Fractional Calculus at the Division of Applied Mathematics, Brown University, Providence, RI, see [http://www.cfm.brown.edu/people/gk/FPDEs/MAINARDI\\_BROWN-UNIVERSITY-Fractional-Calculus-SYLLABUS%20\(1\).pdf](http://www.cfm.brown.edu/people/gk/FPDEs/MAINARDI_BROWN-UNIVERSITY-Fractional-Calculus-SYLLABUS%20(1).pdf)

## PROMOTION OF FRACTIONAL CALCULUS

In order to promote research and exchange of ideas in the theory and applications of fractional calculus, he has supported the Journal "Fractional Calculus and Applied Analysis" (FCAA, founded in 1998) and, at the end of 2000, he has created (with some collaborators) the WEB site <http://www.fracalmo.org> (FRActional CALculus MOdelling).

## INTERNATIONAL COMMITTEE OF INTERNATIONAL WORKSHOPS

- The 1st IFAC Workshop on Fractional Differentiation and its Applications, FDA'04 took place in Bordeaux, France; July 19-21, 2004; <http://extranet.ims-bordeaux.fr/LAPS/wlap/events/FDA04/home.html>
- The 2nd IFAC Workshop on Fractional Differentiation and its Applications FDA'06 took place in Porto, Portugal; July 19-21, 2006; <http://www.gecad.isep.ipp.pt/FDA06/>
- The 3rd IFAC Workshop on Fractional Differentiation and its Applications FDA'08 took place in Ankara, Turkey; November 5-7, 2008; <http://fda08.cankaya.edu.tr/>
- The 4th IFAC Workshop on Fractional Differentiation and its Applications FDA'10 took place at the University of Extremadura, Badajoz, Spain, October 18-20, 2010; <http://web.tuke.sk/fda10/index.html>
- The 5th IFAC Workshop on Fractional Differentiation and its Applications FDA'12 took place at the Hohai University, Nanjing, China, 14-17 May 2012; <http://em.hhu.edu.cn/fda12/>
- The International Conference on Fractional Differentiation and its Applications IC-FDA'14 took place at the University of Catania, Italy, June 23-25, 2014; <http://www.icfda14.dieei.unict.it/>
- The International Conference on Fractional Differentiation and its Applications IC-FDA'16 will take place at the University of Novi Sad, Serbia, July 18-20, 2016; <http://www.icfda16.com/>

## RESEARCH PROJECTS

- During the period 1976-1981 he has acted as a Coordinator of a Group in Bologna University in the framework of a National Geodynamic Project supported by the National Research Council (CNR).
- Since 1982 to 2013 (Year of forced retirement) he has acted as a Coordinator of a Group in Bologna University for annual research projects supported by the Ministry of University and/or the University of Bologna (RFO) concerning Methods and Problems in Mathematical Physics.