



# Maurizio Stefano Vianello

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## ● WORK EXPERIENCE

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2022 – CURRENT Milano, Italy

**ADJUNCT PROFESSOR** POLITECNICO DI MILANO

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Retired from Politecnico di Milano (1/11/22).

Adjunct Professor:

2024-2025

2023-2024

- Applied Mathematics for Parametric Architecture

2022/2023

- Meccanica Razionale e dei Continui
- Mathematical and Physical Methods for Engineering
- Applied Mathematics for Parametric Architecture
- Matematica Applicata per la Progettazione
- Metodi probabilistico statistici per l'ingegneria delle costruzioni

01/11/2016 – 31/10/2022 Milano, Italy

**MEMBER OF "GIUNTA DI SCUOLA AUIC", POLITECNICO DI MILANO** POLITECNICO DI MILANO

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*Member of the Board of "Scuola di Architettura, Urbanistica e Ingegneria Edile": Coordination and organization of Courses and Degrees.*

01/11/2000 – 31/10/2022 Milano, Italy

**PROFESSOR OF MATHEMATICAL PHYSICS** DEPARTMENT OF MATHEMATICS, POLITECNICO DI MILANO

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Research in Mathematical Physics and Teaching of Applied Mathematics Courses

Teaching:

- Continuum Mechanics
- Rational Mechanics
- Mathematics and Mechanics of Solids
- Physical-Mathematical Modeling for Engineering
- Linear Algebra and Geometry
- Probability and Statistics

Ph.D Courses:

- Solid Mechanics for Discrete Modelling of Structures
- Fundamentals of Parametric Modelling: from Architectural Geometry to the Design of Architectural Forms and their Functions
- Advanced Continuum Mechanics
- Applied Mathematics for Architecture

2009 – 2015 Milano, Italy

**VICE DEAN** POLITECNICO DI MILANO

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Vice Dean of the School of Civil Architecture.

Responsible for:

- International relations
- Scheduling and teaching organization
- Admission test

1991 – 2000 Milano, Italy

**ASSOCIATE PROFESSOR OF MATHEMATICAL PHYSICS** DEPARTMENT OF MATHEMATICS, POLITECNICO DI MILANO

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Research on Continuum Mechanics

Teaching:

- Rational Mechanics, for students of Management Engineering
- Rational Mechanics, for students of Biomedical Engineering

1980 – 1992 Milano, Italy

**ASSISTANT PROFESSOR OF MATHEMATICAL PHYSICS** DEPARTMENT OF MATHEMATICS, POLITECNICO DI MILANO

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Research on Continuum Mechanics

Teaching:

- Recitation classes on Rational Mechanics
- Rational Mechanics, for students of Electronic Engineering

## ● EDUCATION AND TRAINING

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1982 – 1984 Pittsburgh, United States

**PH. D. MATHEMATICS** Carnegie-Mellon University

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Principal subject covered: Continuum Mechanics

Title of qualification awarded: Ph. D. in Mathematics

Ph. D. thesis adviser: Morton E. Gurtin

**Website** [www.cmu.edu](http://www.cmu.edu) | **Field of study** Applied Mathematics | **Thesis** On second-grade fluids

1981 – 1982 Pittsburgh, United States

**MASTER OF SCIENCE (MS), MATHEMATICS** Carnegie-Mellon University

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**Website** [www.cmu.edu](http://www.cmu.edu)

1970 – 1975 Milano, Italy

**B.S. IN MATHEMATICS (LAUREA IN MATEMATICA)** Università Statale di Milano (Milan State University)

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**Website** [www.unimi.it](http://www.unimi.it) | **Field of study** Mathematics | **Final grade** 110/100 cum laude

## ● LANGUAGE SKILLS

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Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C1	C2	C1	C1	C2

*Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user*

## ● DIGITAL SKILLS

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Proficient User of Latex | Asymptote Drawing Software

## ● SCIENTIFIC POSITIONS

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2004 – CURRENT

**Associate Editor of "Mathematics and Mechanics of Solids", SAGE Publishing Group.**

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Twice elected to the Scientific Board of the Department of Mathematics (3 members), responsible for allocation of resources and positions within the Department.

1999 – 2006

**Scientific Board (Department of Mathematics, Politecnico di Milano)**

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## ● PUBLICATIONS

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2024

**[Antonio Signorini and the proto-history of the non-linear theory of elasticity](#)**

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G. Saccomandi and M.V., Arch. Hist. Exact Sci. 78, 375–400 2024.

2021

**Shear waves in a nonlinear relaxing media: A three-dimensional perspective**

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G. Saccomandi and M.V. Shear waves in a nonlinear relaxing media: A three-dimensional perspective. J. Acoust. Soc. Am. 149(3) March 2021. <https://doi.org/10.1121/10.0003605> .

2019

**On orthogonal transformations of the Christoffel equations**

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Bos, L., Slawinski, M.A., Stanoev, T. et al. On orthogonal transformations of the Christoffel equations. Int J Geomath 11(6) (2020). <https://doi.org/10.1007/s13137-020-0141-7>

2016

**Interstitial energy flux and stress-power for second-gradient elasticity.**

---

A. Morro and M.V., Interstitial energy flux and stress-power for second-gradient elasticity. Mathematics and Mechanics of Solids 21(4): 403-412 (2016) (DOI: 10.1177/1081286514522475) .

2014

**Internal Constraints in Finite Elasticity: Manifolds or not**

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M.V., Internal Constraints in Finite Elasticity: Manifolds or not. Journal of Elasticity 114:197-211, (2014) (DOI:10.1007/s10659-013-9435-4) .

2013

**Proper formulation of viscous dissipation for nonlinear waves in solids**

---

M. Destrade, G. Saccomandi and M.V., Proper formulation of viscous dissipation for nonlinear waves in solids. The Journal of the Acoustical Society of America 133(3):1255--1259, (2013) (DOI:10.1121/1.4776178) .

2013

**On a stress-power-based characterization of second-gradient elastic fluids**

---

P. Podio-Guidugli and M. V., On a stress-power-based characterization of second-gradient elastic fluids. Continuum Mechanics and Thermodynamics 25(2-4):399--421 (2013) (DOI 10.1007/s00161-012-0267-4) .

2012

**A unified approach to invariants of plane elasticity tensors**

---

S. Forte and M.V., A unified approach to invariants of plane elasticity tensors. Meccanica 49(9):2001-2012, (2014) (DOI:10.1007/s11012-014-9916-y) .

2011

**Some remarks prompted by a commentary due to Professors F. Dell'Isola and P. Seppacher**

---

P. Podio-Guidugli and M. V., Some remarks prompted by a commentary due to Professors F. Dell'Isola and P. Seppacher. Continuum Mechanics and Thermodynamics 23(5):479--481, (2011)

(DOI:10.1007/s00161-010-0135-z) .

2011

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### **Theoretical study and numerical simulation of textiles**

---

P. Antonietti, P. Biscari, A. Tavakoli, M. Verani and M. V., Theoretical study and numerical simulation of textiles. Appl. Math. Model, 35(6): 2669-2681, 2011 (DOI:10.1016/j.apm.2010.11.062) .

2010

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### **Hypertractions and hyperstresses convey the same mechanical information**

---

P. Podio-Guidugli and M. V., Hypertractions and hyperstresses convey the same mechanical information. Continuum Mechanics and Thermodynamics 22(3):163--176, 2010 (DOI: 10.1007/s00161-010-0135-z, 2010).

2006

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### **Restricted invariants on the space of elasticity tensors**

---

S. Forte and M. V., Restricted invariants on the space of elasticity tensors. Mathematics and Mechanics of Solids 11(1):48--82, 2006 (DOI: 10.1177/1081286505046483, 2005).

2005

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### **The symmetry group of gradient sensitive fluids**

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V. Testa and M. V., The symmetry group of gradient sensitive fluids. Int. Journal of Non-Linear Mechanics 40:621--631, 2005.

2001

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### **A new proof that the number of elastic symmetries is eight**

---

P. Chadwick, S. Cowin and M. V., A new proof that the number of elastic symmetries is eight. J. Mech. Phys. Solids 49(11):2471--2492, 2001.

1998

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### **Functional bases for transversely isotropic and transversely hemitropic invariants of elasticity tensors**

---

S. Forte and M. V., Functional bases for transversely isotropic and transversely hemitropic invariants of elasticity tensors. Q. Jl. Mech. Appl. Math. 51(4):543--552, 1998.

1997

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### **Rotations which make strain and stress coaxial**

---

C. Sgarra and M. V., Rotations which make strain and stress coaxial. J. Elasticity 47:217--224, 1997.

1997

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### **A universal relation characterizing transversely hemitropic hyperelastic materials**

---

G. Saccomandi and M. V., A universal relation characterizing transversely hemitropic hyperelastic materials. Math. Mech. Solids. 2:181--188, 1997.

1997

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### **Directions of coaxiality between pure strain and stress in linear elasticity**

---

C. Sgarra and M. V., Directions of coaxiality between pure strain and stress in linear elasticity. J. Elasticity 46:263--265, 1997.

1997

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### **Symmetry classes and harmonic decomposition for photoelasticity tensors**

---

S. Forte and M. V., Symmetry classes and harmonic decomposition for photoelasticity tensors. Internat. J. Engrg. Sci. 35(14):1317--1326, 1997.

1997

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### **An integrity basis for plane elasticity tensors**

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M. V., An integrity basis for plane elasticity tensors. Archives of Mechanics 49(1):197--208, 1997.

1996  
**Optimization of the stored energy and coaxiality of strain and stress in finite elasticity**

---

M. V., Optimization of the stored energy and coaxiality of strain and stress in finite elasticity. J. Elasticity 44:193--202, 1996.

1996  
**Coaxiality of strain and stress in anisotropic linear elasticity**

---

M. V., Coaxiality of strain and stress in anisotropic linear elasticity. J. Elasticity 42:283--289, 1996.

1996  
**Symmetry classes for elasticity tensors**

---

S. Forte and M. V., Symmetry classes for elasticity tensors. J. Elasticity 43(2):81--108, 1996.

1996  
**Internal constraints and bifurcations in pseudo-rigid bodies**

---

S. Forte and M. V., Internal constraints and bifurcations in pseudo-rigid bodies. Math. Model Methods Appl. Sci. 6(7):1009--1025, 1996.

1995  
**Constraint groups**

---

A. Danescu, P. Podio-Guidugli and M. V., Constraint groups. J. Elasticity 37(1):91--92, 1994/95.

1994  
**On the differentiability of local representations of isotropic constraints**

---

A. Danescu, P. Podio-Guidugli and M. V., On the differentiability of local representations of isotropic constraints. Special Issue of the Bulletin of the Technical University of Istanbul "Suhubi and Continuum Mechanics", E. Inana, editor, vol. II, 1994.

1994  
**Linearization of response mappings in constrained elasticity**

---

P. Podio Guidugli and M. V., Linearization of response mappings in constrained elasticity. Journal of Elasticity 34:185--189, 1994.

1991  
**Internal constraints and linear constitutive relations for transversely isotropic materials**

---

P. Podio-Guidugli and M. V., Internal constraints and linear constitutive relations for transversely isotropic materials. Rend. Mat. Acc. Lincei 21:241--248, 1991.

1990  
**Constraint manifolds with constant reaction spaces**

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M. V., Constraint manifolds with constant reaction spaces. Meccanica 25:189--191, 1990.

1990  
**The representation problem of constrained linear elasticity**

---

P. Podio-Guidugli and M. V., The representation problem of constrained linear elasticity. Journal of Elasticity 28:271--276, 1990.

1990  
**On the active part of the stress for elastic materials with internal constraints**

---

M. V., On the active part of the stress for elastic materials with internal constraints. Journal of Elasticity 24:289--294, 1990.

1990  
**The representation problem for constrained hyperelastic materials**

---

M. V., The representation problem for constrained hyperelastic materials. Arch. Rational Mech. Anal.

111(1):87--98, 1990.

1990

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### **Minimal and maximal free energy for materials with memory**

---

A. Morro and M. V., Minimal and maximal free energy for materials with memory. Boll. Unione Mat. Ital. 4-A:45--55, 1990.

1989

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### **On the equilibrium theory of second grade fluids**

---

M. V., On the equilibrium theory of second grade fluids. Arch. Mech. 41:641--649, 1989.

1989

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### **Free energy and internal variables in linear viscoelasticity**

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A. Morro and M. V., Free energy and internal variables in linear viscoelasticity. Rend. Accad. Naz. Lincei LXXXIII 215--219, 1989.

1989

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### **Constraint manifolds for isotropic solids**

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P. Podio-Guidugli and M. V., Constraint manifolds for isotropic solids. Arch. Rational Mech. Anal. 105(2):105--121, 1989.

1989

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### **On Blinowski's second grade materials**

---

M. V., On Blinowski's second grade materials. Arch. Mech. 41:181--184, 1989.

1988

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### **On surface stresses and edge forces**

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S. Forte and M. V., On surface stresses and edge forces. Rendiconti di Matematica Serie VII 8:409--426, 1988.

1986

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### **On fluids of grade $n$**

---

M. E. Gurtin, M. V. and W. O. Williams, On fluids of grade  $n$ . Meccanica 21:179--183, 1986.

1980

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### **Sull'equilibrio di membrane con contorno materiale**

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M. V., Sull'equilibrio di membrane con contorno materiale. Rend. Ist. Lombardo Cl. A 114:243--253, 1980.

1979

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### **Sull'equilibrio di membrane a curvatura costante non semplicemente connesse**

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M. V., Sull'equilibrio di membrane a curvatura costante non semplicemente connesse. Rend. Ist. Lombardo Cl. A 113:161--169 1979.

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## **BOOKS**

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### **Meccanica Razionale (A Textbook on Rational Mechanics for students of Engineering).**

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P. Biscari, G. Saccomandi, T. Ruggeri and M. V., Meccanica Razionale (A Textbook on Rational Mechanics for students of Engineering). Springer Italia, 4th edition 2022. Print ISBN 978-88-470-4017-5, Online ISBN 978-88-470-4018-2, DOI: <https://doi.org/10.1007/978-88-470-4018-2>

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### **Meccanica dei Continui (A Textbook on Continuum Mechanics)**

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S. Forte, L. Preziosi, M.V., Meccanica dei Continui (A Textbook on Continuum Mechanics). Springer Italia, 1st edition 2019. Print ISBN 978-88-470-3984-1, Online ISBN 978-88-470-3985-8, DOI: <http://dx.doi.org/10.1007/978-88-470-3985-8>