Prof. Eng. Paolo Venini
Short Curriculum Vitae

Personal data and contacts

Prof. Eng. Paolo Venini
Born in Pavia (Italy), 12-19-1968
Department of Civil Engineering and Architecture
University of Pavia
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Education

- 1991 - Laurea in Civil Engineering, cum laude, University of Pavia
- 1992 - Master of Science in Civil Engineering, University of Illinois at Urbana-Champaign, Illinois, USA
- 1996 - Ph.D. in Structural Engineering, Politecnico di Milano
- 1998 - Laurea in Mathematics, cum laude, University of Pavia

Academic History

- 1994-2001: Assistant Professor in Applied Mechanics, University of Pavia
- 2001-present: Associate Professor in Solid and Structural Mechanics, University of Pavia
- 2017 - National habilitation to the role of Full Professor in Solid and Structural Mechanics

Research Interests

- Topology optimization: statics, dynamics and material response
- Earthquake engineering: advanced design methods for new and existing structure
- Computational mechanics: truly mixed finite element methods in elasticity and plasticity, stochastic methods for uncertain systems, multiresolution and wavelet methods
- Deep learning approaches for structural dynamics, control and optimization

Editorial activity

Paolo Venini is reviewer for the following International Journals:

- Structural and Multidisciplinary Optimization
- Computer Methods in Applied Mechanics and Engineering
- Computers and Structures
- Mechanical Systems and Signal Processing
- Earthquake Engineering and Structural Dynamics
- Engineering Structures
- Journal of Optimization Theory and Applications
- Journal of Vibration and Control
- Meccanica

Publications in International Journals

1. Venini, P., A new rational approach to multi-input multi-output 3D topology optimization, Computers and Structures, 2024, 298, 107362
2. Venini, P., Pingaro, M., Static and dynamic topology optimization: an innovative unifying approach, Structural and Multidisciplinary Optimization, 2023, 66(4), 85
3. Bernuzzi, C., Rottenbacher, C., Simoncelli, M., Venini, P., Modal identification of storage racks for cheese wheels, Structural Control and Health Monitoring, 2022, 29(10), e3052
4. Pingaro, M., Maurelli, G., Venini, P., Analysis and Damage Identification of a Moderately Thick Cracked Beam Using an Interdependent Locking-Free Element, Journal of Optimization Theory and Applications, 2020, 187(3), pp. 800–821
5. Venini, P., Topology optimization of dynamic systems under uncertain loads: An H_∞-norm-based approach, Journal of Computational and Nonlinear Dynamics, 2019, 14(2), 021007
6. Venini, P., Ceresa, P., A rational H_∞-norm-based approach approach for the optimal design of seismically excited reinforced concrete frames, Earthquake Engineering and Structural Dynamics, 2018, 47(6), pp. 1522–1543
7. Venini, P., Cinquini, C., Reinforced concrete seismically-excited frame design with a new mixed H_2/H_∞ optimization approach, Meccanica, 2018, 53(6), pp. 1547–1564

8. Venini, P., Pingaro, M., An innovative H_∞-norm based worst case scenario approach for dynamic compliance optimization with applications to viscoelastic beams, Structural and Multidisciplinary Optimization, 2017, 55(5), pp. 1685–1710

9. Venini, P., Pingaro, M., A new approach to optimization of viscoelastic beams: minimization of the input/output transfer function H_∞-norm, Structural and Multidisciplinary Optimization, 2017, 55(5), pp. 1559–1573

10. Di Barba, P., Mognaschi, M.E., Venini, P., Wiak, S., Biogeography-inspired multiobjective optimization for helping MEMS synthesis, Archives of Electrical Engineering, 2017, 66(3), pp. 607–623

11. Di Barba, P., Liu, B., Mognaschi, M.E., Venini, P., Wiak, S., Multiphysics field analysis and evolutionary optimization: Design of an electro-thermoelastic microactuator, International Journal of Applied Electromagnetics and Mechanics, 2017, 54(3), pp. 433–448

12. Venini, P., Dynamic compliance optimization: Time vs frequency domain strategies, Computers and Structures, 2016, 177, pp. 12–22

13. Pingaro, M., Venini, P., A fast approach to analysis and optimization of viscoelastic beams, Computers and Structures, 2016, 168, pp. 46–55

14. Maurelli, G., Maini, N., Venini, P., Mixed methods for viscoelastodynamics and topology optimization, Frattura ed Integrita Strutturale, 2014, 8(29), pp. 351–363

15. Bruggi, M., Venini, P., A numerical investigation on the size effect of fiber-reinforced concrete specimens in crack propagation, Computational Mechanics, 2012, 50(1), pp. 99–117

16. Bruggi, M., Venini, P., Modeling cohesive crack growth via a truly-mixed formulation, Computer Methods in Applied Mechanics and Engineering, 2009, 198(47-48), pp. 3836–3851

17. Bruggi, M., Venini, P., Mixed variational formulations for micro-cracked continua in the multifield framework, Algorithms, 2009, 2(1), pp. 606–622

18. Bruggi, M., Venini, P., A mixed FEM approach to stress-constrained topology optimization, International Journal for Numerical Methods in Engineering, 2008, 73(12), pp. 1693–1714

19. Bruggi, M., Venini, P., Eigenvalue-based optimization of incompressible media using mixed finite elements with application to isolation devices, Computer Methods in Applied Mechanics and Engineering, 2008, 197(13-16), pp. 1262–1279

20. Bruggi, M., Venini, P., A truly mixed approach for cohesive-crack propagation in functionally graded materials, Mechanics of Advanced Materials and Structures, 2007, 14(8), pp. 643–654

21. Bruggi, M., Venini, P., Topology optimization of incompressible media using mixed finite elements, Computer Methods in Applied Mechanics and Engineering, 2007, 196(33-34), pp. 3151–3164

22. Serra, M., Venini, P., On some applications of ant colony optimization metaheuristic to plane truss optimization, Structural and Multidisciplinary Optimization, 2006, 32(6), pp. 499–506

23. Della Croce, L., Venini, P., Finite elements for functionally graded Reissner-Mindlin plates, Computer Methods in Applied Mechanics and Engineering, 2004, 193(9-11), pp. 705–725

24. Naldi, G., Urban, K., Venini, P., A convergent adaptive wavelet-rothe method for elastoplastic hardening, Arabian Journal for Science and Engineering, 2004, 29(2 C), pp. 17–32

25. Cinquini, C., Venini, P., A mortar spectral method for the analysis and optimization of L-shaped laminated plates, Structural and Multidisciplinary Optimization, 2003, 25(5-6), pp. 411–422

26. Venini, P., Nascimbene, R., A new fixed-point algorithm for hardening plasticity based on non-linear mixed variational inequalities, International Journal for Numerical Methods in Engineering, 2003, 57(1), pp. 83–102

27. Della Croce, L., Venini, P., Nascimbene, R., Numerical simulation of an elastoplastic plate via mixed finite elements, Journal of Engineering Mathematics, 2003, 46(1), pp. 69–86

28. Nascimbene, R., Venini, P., A new locking-free equilibrium mixed element for plane elasticity with continuous displacement interpolation, Computer Methods in Applied Mechanics and Engineering, 2002, 191(17-18), pp. 1843–1860

29. Cinquini, C., Venini, P., Nascimbene, R., Tiano, A., Design of a river-sea ship by optimization, Structural and Multidisciplinary Optimization, 2001, 22(3), pp. 240–247

30. Venini, P., Morana, P., An adaptive wavelet-Galerkin method for an elastic-plastic-damage constitutive model: 1D problem, Computer Methods in Applied Mechanics and Engineering, 2001, 190(42), pp. 5619–5638

31. Comincioli, V., Scapolla, T., Naldi, G., Venini, P., A wavelet-like galerkin method for numerical solution of variational inequalities arising in elastoplasticity, Communications in Numerical Methods in Engineering, 2000, 16(2), pp. 133–144

32. Venini, P., Mariani, C., Reliability as a measure of active control effectiveness, Computers and Structures, 1999, 73(1-5), pp. 465–473

33. Cinquini, C., Mariani, C., Venini, P., Mixed finite element formulation and optimal design of thin composite laminates, Control and Cybernetics, 1998, 27(2)

34. Venini, P., Robust control of uncertain structures, Computers and Structures, 1998, 67(1-3), pp. 165–174

35. Mariani, C., Venini, P., On the use of stochastic models of uncertainty in active control and structural optimization, Computers and Structures, 1998, 67(1-3), pp. 105–117

36. Naldi, G., Venini, P., Wavelet analysis of structures: Statics, dynamics and damage identification, Meccanica, 1997, 32(3), pp. 223–230

37. Cinquini, C., Mariani, C., Venini, P., Optimal robust design of novel materials: Problems of stability and vibrations, Engineering Optimization, 1997, 29(1-4), pp. 323–245

38. Venini, P., Mariani, C., Free vibrations of uncertain composite plates via stochastic Rayleigh-Ritz approach, Computers and Structures, 1997, 64(1-4), pp. 407–423

39. Wen, Y.-K., Ghaboussi, J., Venini, P., Nikzad, K., Control of structures using neural networks, Smart Materials and Structures, 1995, 4(1A), 018

40. Cinquini, C., Mariani, C., Venini, P., Rayleigh-Ritz analysis of elastically constrained thin laminated plates on Winkler inhomogeneous foundations, Computer Methods in Applied Mechanics and Engineering, 1995, 123(1-4), pp. 263–286

41. Faravelli, L., Venini, P., Active structural control by neural networks, Journal of Structural Control, 1994, 1(1-2), pp. 79–101

42. Casciati, F., Venini, P., Equivalent linearization for seismic responses. I: Formulation and error analysis, Journal of Engineering Mechanics, 1994, 120(3), pp. 676–678

43. Casciati, F., Faravelli, L., Venini, P., Frequency analysis in stochastic linearization, Journal of Engineering Mechanics, 1994, 120(12), pp. 2498–2518

Scientific and Consultant Activity - Main clients and reecent ontracts

1. 2020-present. ETEM s.r.l., Via XXV Aprile, 7 - 27010 Valle Salimbene (PV) Italy. Design and verification of guard boots and armoured bulletproof explosion-proof security structures using advanced nonlinear dynamics approaches

2. 2021-present. PARLUX SPA - Via Goldoni 10/12, 20090 Trezzano sul Naviglio (MI). Design and optimization of professiona hairdryers using topology optimization in a Computational Fluid Dynamics setting

3. 2024-present. TECNO IN S.P.A. Milano, San Donato Milanese (MI), Via G. Marcora, 52, 20097. A monitoring strategy for bridge infrastructures (in collaboration with Prof. Francesca Picchio)

4. 2022-present. Municipality of Verona. Modeling, verification and retrofit of an historic wall located at "Torricelle" in Verona.

5. 2022-present. Società Istituto Terapeutico Villa Panoramica s.p.a. Milano, Via Carducci 31. Computation of the seismic risk index of the building named "Ex-Hotel Eden" in Verbania (VB), Via Vittorio Veneto

6. 2023-present. Conservatorio di Musica Franco Vittadini, Via A. Volta 31, Pavia. Computation of the seismic risk index of the building hosting the School of Music

7. 2022-2023. Municipality of Pavia. Computation of the seismic risk index of twenty primary school buildings

8. 2022-2023. ASM Pavia S.p.A., Via Donegani, 21 27100 Pavia. Computation of the seismic risk index of the buildings hosting ASM Pavia

Teaching

- Mechanics of Structures and Materials - Scienza delle Costruzioni (in Italian) - Laurea Degree in Building Engineering, University of Pavia

- Probability and Statistics for Engineering Applications - Civil Enginnering for Mitigation of Risk from Natural Hazards, IUSS School of Advanced Studies, Pavia.

- Methods of Topology optimization with applications to structural engineering. University ia Sapienza, Roma, Ph.D. School