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Xu Guo, academician of the Chinese Academy of Sciences (CAS), obtained his Ph.D. from Dalian University of Technology (DUT) under the supervision of Prof. Gengdong Cheng in 1998. After two years Postdoctoral study in Prof. Yamazaki's Laboratory in Kanazawa University (Japan), he joined DUT in 2000. He is now the director of the Third Engineering Division, DUT and holds the Chang Jiang Distinguished Professorship. He is also the director of International Research Center for Computational Mechanics from Chinese side, and the leader of a nationally recognized research team on computational mechanics under the long-term support from the National Natural Science Foundation of China (NSFC). He served as the President of the Chinese Association of Computational Mechanics and Vice president of the Chinese Society of Theoretical and Applied Mechanics during 2019-2025. He has published more than 300 journal papers, including 40 papers in CMAME, 16 papers in IJNME, 15 papers in JMPS, 13 papers in IJSS, respectively.

Editorial and academic services

- Vice-President of *the International Society for Structural and Multidisciplinary Optimization*
- President of *the Chinese Association of Computational Mechanics* (2020-2025)
- Vice president of *the Chinese Society of Theoretical and Applied Mechanics* (2019-2025)
- Member of the editorial board of *Computer Methods in Applied Mechanics and Engineering*

- Associate Editor of *ASME-Journal of Mechanical Design*
- Associate Editor of *Theoretical & Applied Mechanics Letters*
- Associate Editor of *Chinese Journal of Computational Mechanics*
- Review Editor of *Structural and Multidisciplinary Optimization*
- Editor of *Extreme Mechanics Letters*
- Editor of *Acta Mechanica Sinica*
- Editor of *Acta Mechanica Solida Sinica*
- Editor of *Science China Materials*
- Editor of *Applied Mathematics and Mechanics (Chinese Edition)*
- Chairman of *the 13th World Congress on Structural and Multidisciplinary Optimization (2019)*
- General Secretary of *the Asian Association for Structural and Multidisciplinary Optimization*
- Director of the Committee for *Young Investigators of the Chinese Society of Theoretical and Applied mechanics*
- Vice Director the Committee for *Micro-nanomechanics of the Chinese Society of Theoretical and Applied mechanics*
- Member of the Executive Committee of *the Asian Association for Structural and Multidisciplinary Optimization*
- Member of the International Paper's Committee of *the 9th World Congress on Structural and Multidisciplinary Optimization*
- Member of the Executive Committee of *the International Chinese Association for Computational Mechanics*

Invited lectures (selected)

- Plenary Lecture in *the 9th Asian Pacific Congress on Computational Mechanics/The 7th Australasian Conference on Computational Mechanics*, Brisbane, Australia, 2025
- Plenary Lecture in *the 30th International Conference on Computational & Experimental Engineering and Sciences (ICCES2024)*, Singapore, Singapore, 2024
- Plenary Lecture in *the Chinese Congress of Theoretical and Applied Mechanics 2025*, Changsha, China, 2025

- Semi-Plenary Lecture in *the 12th World Congress on Computational Mechanics*, Seoul, Korea, 2016
- Semi-Plenary Lecture in EUROGEN 2021 (ECCOMAS Thematic Conference), Athens, Greece, 2021
- Plenary Lecture in *the International Conference on Modeling in Mechanics and Materials*, San Francisco, USA, 2018
- Semi-Plenary Lecture in *the 2nd International Conference on Computational Engineering and Science for Safety and Environmental Problems*, Chengdu, China, 2017
- Plenary Lecture in *the 4th International Conference on Computational Design in Engineering*, Changwon, Korea, 2018
- General Lecture in *the Chinese Conference on Computational Mechanics-2010*, Mianyang, China, 2010
- General Lecture in *the 5th China-Japan-Korea Joint Symposium on Optimization of Structural and Mechanical Systems*, Jeju Island, Korea, 2008

Academic awards (selected)

- Ho Leung Ho Lee Foundation Science and Technology Achievement Award (*from the Ho Leung Ho Lee Foundation*), 2024
- Xu Zhilun Mechanics Award (*from Xu Zhilun Education Foundation*), 2021
- Outstanding Talent of Liaoning Province (*from Liaoning Provincial Government*), 2021
- National Innovation Award (*from China Government*), 2020
- Qian Lingxi Award for Achievement in Computational Mechanics (*from Qian Lingxi Mechanics Award Foundation*), 2020
- National Natural Science Award (*from China government*), 2019
- Natural Science Award (*from the Chinese Ministry of Education*), 2019
- China Mechanics Natural Science Award (*from the Chinese Society of Theoretical and Applied Mechanics*), 2018
- ASSMO Award (*from the Asian Society of Structural and Multidisciplinary Optimization*), 2018
- ICACM Award (*from the International Chinese Association for Computational*

Mechanics), 2018

- Changjiang Professorship (*from the Chinese Ministry of Education*), 2012
- National Award for Youth in Science and Technology (*from China Government*), 2011
- CADLM Intelligent Optimal Design Prize (*from the Association for Simulation and Multidisciplinary Design Optimization*), 2010
- Outstanding Young Investigator Award (*from the Natural Science Foundation of China*), 2009
- Award for Youth in Science and Technology (*from the Chinese Society of Theoretical and Applied Mechanics*), 2009
- National Natural Science Award (*from China Government*), 2006
- Natural Science Award (*from Liaoning Provincial Government*), 2005
- Natural Science Award (*from the Chinese Ministry of Education*), 2003

Representative publications (* corresponding author)

1. Guo Y. L., Liu C.*, Jia Y. B., Shen C. Y., **Guo X.*** A multi-material topology optimization method based on implicit topology description functions. *Computer Methods in Applied Mechanics and Engineering* 2025, 436: 117676.
2. Zhang W. S.*, Liu Y., Mei Y.*, **Guo X.**, Youn S. K. Structural internal crack detection using surface deformation via topology optimization in the context of PeriDynamics. *Computer Methods in Applied Mechanics and Engineering* 2025, 446: 118321.
3. Zhang W. S.*, Wang Y., Youn S. K., **Guo X.*** Machine learning powered sketch aided design via topology optimization. *Computer Methods in Applied Mechanics and Engineering* 2024, 419: 116651.
4. Ren X. Q., Du Z. L.*, Chung H. Y., Tang S., Guo Y. H., Chen B. S., **Guo X.*** Finite deformation analysis of bi-modulus thermoelastic structures and its application in wrinkling prediction of membranes. *Computer Methods in Applied Mechanics and Engineering* 2024, 427: 117034.
5. Zhang W. S.*, Liu Y., Zhang J., Li J. L., **Guo X.***, Youn S. K. Topology optimization of structures guarding against brittle fracture via peridynamics-based SIMP approach. *Computer Methods in Applied Mechanics and Engineering* 2024, 432: 117438.

6. Wang H. Y., Du Z. L., Feng F. Y., Kang Z., Tang S.*, **Guo X.*** DiffMat: Data-driven inverse design of energy-absorbing metamaterials using diffusion model. *Computer Methods in Applied Mechanics and Engineering* 2024, 432: 117440.
7. Huo W. D., Liu C.*, Liu Y. P., Du Z. L., Zhang W. S., **Guo X.*** A novel explicit design method for complex thin-walled structures based on embedded solid moving morphable components. *Computer Methods in Applied Mechanics and Engineering* 2023, 417: 116431.
8. Zhang W. S., Wang Y., Du Z. L., Liu C., Youn S. K. *, **Guo X.*** Machine-learning assisted topology optimization for architectural design with artistic flavor. *Computer Methods in Applied Mechanics and Engineering* 2023, 413: 116041.
9. Jiang X. D., Huo W. D.*, Liu C.*, Du Z. L., Zhang X.Y., Li X., **Guo X.*** Explicit layout optimization of complex rib-reinforced thin-walled structures via computational conformal mapping (CCM). *Computer Methods in Applied Mechanics and Engineering* 2023, 404: 115745.
10. Jiang X. D., Liu C.*, Du Z. L., Huo W. D., Zhang X. Y., Liu F., **Guo X.*** A unified framework for explicit layout/topology optimization of thin-walled structures based on Moving Morphable Components (MMC) method and adaptive ground structure approach. *Computer Methods in Applied Mechanics and Engineering* 2022, 396: 115047.
11. Ma C., Xue D. C., Li S. S., Zhou Z. C. Zhu Y. C.*, **Guo X.*** Compliance minimisation of smoothly varying multiscale structures using asymptotic analysis and machine learning. *Computer Methods in Applied Mechanics and Engineering* 2022, 395: 114861.
12. Zhang W. S., Yan X. Y., Meng Y., Zhang C. L., Youn S. K.*, **Guo X.*** Flexoelectric nanostructure design using explicit topology optimization. *Computer Methods in Applied Mechanics and Engineering* 2022, 394: 114943.
13. Liu D. P., Yang H., Elkhodary E. I., Tang S.*, Liu W. K. *, **Guo X.*** Mechanistically informed data-driven modeling of cyclic plasticity via artificial neural networks. *Computer Methods in Applied Mechanics and Engineering* 2022, 393: 114766.
14. Li S. S., Zhu Y. C.*, **Guo X.*** Optimisation of spatially varying orthotropic porous structures based on conformal mapping. *Computer Methods in Applied Mechanics and Engineering* 2022, 391: 114589.
15. Zhang G., Guo T. F., Elkhodary E. I., Tang S.*, **Guo X.*** Mixed Graph-FEM phase field modeling of fracture in plates and shells with nonlinearly elastic solids.

- Computer Methods in Applied Mechanics and Engineering* 2022, 389: 114282.
16. Tang S., Yang H., Qiu H., Fleming M., Liu W. K.*, **Guo X.*** MAP123-EPF: A mechanistic-based data-driven approach for numerical elastoplastic modeling at finite strain. *Computer Methods in Applied Mechanics and Engineering* 2021, 373: 113484.
 17. Tang S., Li Y., Qiu H., Yang H., Saha S., Mojumder S., Liu W. K.*, **Guo X.*** MAP123-EP: A mechanistic-based data-driven approach for numerical elastoplastic analysis. *Computer Methods in Applied Mechanics and Engineering* 2021, 364: 112955.
 18. Liu C., Du Z. L.*, Zhu Y. C., Zhang W. S., Zhang X. Y., **Guo X.*** Optimal design of shell-graded-infill structures by a hybrid MMC-MMV approach. *Computer Methods in Applied Mechanics and Engineering* 2020, 369: 113187.
 19. Xue D. C., Zhu Y. C.*, **Guo X.*** Generation of smoothly-varying infill configurations from a continuous menu of cell patterns and the asymptotic analysis of its mechanical behaviour. *Computer Methods in Applied Mechanics and Engineering* 2020, 366: 113037.
 20. Zhang W. S., Jiang S., Liu C., Li D. D., Kang P., Youn S. K.*, **Guo X.*** Stress-related topology optimization of shell structures using IGA/TSA-based moving morphable void (MMV) approach. *Computer Methods in Applied Mechanics and Engineering* 2020, 366: 113036.
 21. Zhang W. S., Li D. D., Kang P., **Guo X.***, Youn S. K.* Explicit topology optimization using IGA-based moving morphable void (MMV) approach. *Computer Methods in Applied Mechanics and Engineering* 2020, 360: 112685.
 22. Zhang G., Guo T. F., **Guo X.***, Tang S.*, Fleming M., Liu W. K. Fracture in tension–compression-asymmetry solids via phase field modeling. *Computer Methods in Applied Mechanics and Engineering* 2019, 357: 112573.
 23. Tang S., Zhang G., Yang H., Li Y.*, Liu W. K.*, **Guo X.*** MAP123: A data-driven approach to use 1D data for 3D nonlinear elastic materials modeling. *Computer Methods in Applied Mechanics and Engineering* 2019, 357: 112587.
 24. Tang S., Zhang G., Guo T. F., **Guo X.***, Liu W. K.* Phase field modeling of fracture in nonlinearly elastic solids via energy decomposition. *Computer Methods in Applied Mechanics and Engineering* 2019, 347: 477-494.
 25. Xue R. Y., Liu C., Zhang W. S., Zhu Y. C., Tang S., Du Z. L.*, **Guo X.*** Explicit structural topology optimization under finite deformation via moving morphable

- void (MMV) approach. *Computer Methods in Applied Mechanics and Engineering* 2019, 344: 798-818.
26. Zhang W. S., Li D., Zhou J. H., Du Z. L., Li B. J., **Guo X.*** A moving morphable void (MMV)-based explicit approach for topology optimization considering stress constraints. *Computer Methods in Applied Mechanics and Engineering* 2018, 334: 381-413.
 27. Zhang W. S., Liu Y., Wei P., Zhu Y. C. and **Guo X.*** Explicit control of structural complexity in topology optimization. *Computer Methods in Applied Mechanics and Engineering* 2017, 324: 149-169.
 28. **Guo X.***, Zhou J. H., Zhang W. S., Du Z. L., Liu C., Liu Y. Self-supporting structure design in additive manufacturing through explicit topology optimization. *Computer Methods in Applied Mechanics and Engineering* 2017, 323: 27-63.
 29. Zhang W. S., Chen J. S., Zhu X. F., Zhou J. H., Xue D. C., Lei X., **Guo X.*** Explicit three dimensional topology optimization via Moving Morphable Void (MMV) approach. *Computer Methods in Applied Mechanics and Engineering* 2017, 322: 590-614.
 30. Zhang W. S., Li D., Zhang J., **Guo X.*** Minimum length scale control in structural topology optimization based on the Moving Morphable Components (MMC) approach. *Computer Methods in Applied Mechanics and Engineering* 2016, 311: 327-355.
 31. **Guo X.***, Zhang W. S., Zhang J., Yuan J. Explicit structural topology optimization based on moving morphable components (MMC) with curved skeletons. *Computer Methods in Applied Mechanics and Engineering* 2016, 310: 711-748.
 32. Zhang W. S., Zhong W. L., **Guo X.*** Explicit layout control in optimal design of structural systems with multiple embedding components. *Computer Methods in Applied Mechanics and Engineering* 2015, 290: 290-313.
 33. **Guo X.***, Zhao X. F., Zhang W. S., Yan J., Sun G. M. Multi-scale robust design and optimization considering load uncertainties. *Computer Methods in Applied Mechanics and Engineering* 2015, 283: 994-1009.
 34. **Guo X.***, Zhang W. S., Zhong W. L. Explicit feature control in structural topology optimization via level set method. *Computer Methods in Applied Mechanics and Engineering* 2014, 272: 354-378.
 35. **Guo X.***, Zhang W. S., Zhong W. L. Stress-related topology optimization of continuum structures involving multi-phase materials. *Computer Methods in*

- Applied Mechanics and Engineering* 2014, 268: 632-655.
36. Wang X. Y., **Guo X.***, Su Z. A quasi-continuum model for human erythrocyte membrane based on the higher order Cauchy-Born rule. *Computer Methods in Applied Mechanics and Engineering* 2014, 268: 284-298.
 37. Zhang W. S., Zhong W. L., **Guo X.*** An explicit length scale control approach in SIMP-based topology optimization. *Computer Methods in Applied Mechanics and Engineering* 2014, 282: 71-86.
 38. **Guo X.***, Zhang W. S., Zhang L. Robust structural topology optimization considering boundary uncertainties. *Computer Methods in Applied Mechanics and Engineering* 2013, 253: 356-368.
 39. **Guo X.***, Zhang W. S., Wang M. Y., Wei P. Stress-related topology optimization via level set approach. *Computer Methods in Applied Mechanics and Engineering* 2011, 200(47-48): 3439-3452.
 40. **Guo X.***, Bai W., Zhang W. S., Gao X. X. Confidence structural robust design and optimization under stiffness and load uncertainties. *Computer Methods in Applied Mechanics and Engineering* 2009, 198(41-44): 3378-3399.
 41. Huo W. D., Liu C.*, Guo Y. L., Du Z. L., Zhang W. S., **Guo X.*** Explicit topography design for complex shell structures based on embedded spline components. *Journal of the Mechanics and Physics of Solids* 2025, 196: 105974.
 42. Liu W, Yu Z. F., Elkhodary K. I., Xiao H. L., Tang S. *, Guo T. F.*, **Guo X.*** A tube-based constitutive model of brain tissue with inner pressure. *Journal of the Mechanics and Physics of Solids* 2025, 196: 105993.
 43. Huang M. C., Liu C., Guo Y. L., Zhang L. F., Du Z. L.*, **Guo X.*** A mechanics-based data-free Problem Independent Machine Learning (PIML) model for large-scale structural analysis and design optimization. *Journal of the Mechanics and Physics of Solids* 2024, 193: 105893.
 44. Luo J. C., Du Z. L. *, Chen H., Ding X. G., Liu C., Zhang W. S., **Guo X.*** Efficient design of helical higher-order topological insulators in 3D elastic medium. *Journal of the Mechanics and Physics of Solids* 2023, 176: 105325.
 45. Jin F.*, Tang Q. Q., **Guo X.**, Gao H. J. A generalized Maugis-Dugdale solution for adhesion of power-law graded elastic materials. *Journal of the Mechanics and Physics of Solids* 2021, 154: 104509.
 46. Du Z. L., Zhang G., Guo T. F., Tang S.*, **Guo X.*** Tension-compression asymmetry at finite strains: A theoretical model and exact solutions. *Journal of the Mechanics*

- and Physics of Solids* 2020, 143: 104084.
47. **Guo X.***, Ma B. B., Zhu Y. C.* A magnification-based multi-asperity (MBMA) model of rough contact without adhesion. *Journal of the Mechanics and Physics of Solids* 2019, 133: 103724.
 48. Zhu Y. C., Li S. S., Du Z. L., Liu C., **Guo X.***, Zhang W.S.* A novel asymptotic-analysis-based homogenisation approach towards fast design of infill graded microstructures. *Journal of the Mechanics and Physics of Solids* 2019, 124: 612-633.
 49. Zhu Y. C., Wei Y. H., **Guo X.*** Gurtin-Murdoch surface elasticity theory revisit: An orbital-free density functional theory perspective. *Journal of the Mechanics and Physics of Solids* 2017, 109: 178-197.
 50. Zhu Y. C., Wang J.*, Xiang Y.*, **Guo X.*** A three-scale homogenisation approach to the prediction of long-time absorption of radiation induced interstitials by nanovoids at interfaces. *Journal of the Mechanics and Physics of Solids* 2017, 105: 1-20.
 51. Du Z. L., **Guo X.*** Variational principles and the related bounding theorems for bi-modulus materials. *Journal of the Mechanics and Physics of Solids* 2014, 73: 183-211.
 52. Yang H., Fan F. F., Liang W. T., **Guo X.**, Zhu T., Zhang S. L.* A chemo-mechanical model of lithiation in silicon. *Journal of the Mechanics and Physics of Solids* 2014, 70: 349-361.
 53. Jin F., **Guo X.***, Gao H. J. Adhesive contact on power-law graded elastic solids: The JKR-DMT transition using a double-Hertz model. *Journal of the Mechanics and Physics of Solids* 2013, 61(12): 2473-2492.
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 55. Zhang H. W.*, Wang J. B., **Guo X.*** Predicting the elastic properties of single-walled carbon nanotubes. *Journal of the Mechanics and Physics of Solids* 2005, 53(9): 1929-1950.
 56. Zhang W. S.* , Tian H. H., Zhu B., **Guo X.***, Youn S. K. Multi-Set MMV Topology Optimization Approach for Sliding Surface Texture Design. *International Journal for Numerical Methods in Engineering* 2025, 126(1): e7612.

57. Xu J. Q., He C. H., Liu C.*, **Guo X.*** Explicit Topology Optimization Based on the Joint-Driven Moving Morphable Components. *International Journal for Numerical Methods in Engineering* 2025, 126(1): e7650.
58. Xu Z. A., Mei Y., Du Z. L.*, **Guo X.** Efficient Analysis and Topology Optimization of Frame Structures With Tension-Compression Asymmetry. *International Journal for Numerical Methods in Engineering* 2025, 126(22): e70182.
59. Ling R., Xu G.*, Zhang X. Y., Xu J. L., **Guo X.** Converting pixel-type topology optimization results to MMC-representation based on sparse optimization and its applications. *International Journal for Numerical Methods in Engineering* 2024, 125(8): e7437.
60. Zhang W. S., Meng Y., Yan X. Y., Shao L. H., Yan D. Z., Liu C., Youn S. K. *, **Guo X.*** Explicit topology optimization for graded lattice flexoelectric nanostructures via ersatz material model. *International Journal for Numerical Methods in Engineering* 2023, 124(17): 3852-3874.
61. Zhou Z. C., Zhu Y. C.*, **Guo X.***. Machine learning based asymptotic homogenization and localization: Predictions of key local behaviors of multiscale configurations bearing microstructural varieties. *International Journal for Numerical Methods in Engineering* 2023, 124(3): 639-669.
62. Li J. L., Zhang Y. W.*, Du Z. L., Liu C., Zhang W. S., Guo X. L., **Guo X.*** A moving morphable component-based topology optimization approach considering transient structural dynamic responses. *International Journal for Numerical Methods in Engineering* 2022, 123(3): 705-728.
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64. Zhang W. S., Xiao Z., Liu C., Mei Y., Youn S. K., **Guo X.*** A scaled boundary finite element based explicit topology optimization approach for three-dimensional structures. *International Journal for Numerical Methods in Engineering* 2020, 121(21): 4878-4900.
65. Du J. M., Du Z. L.*, Wei Y. H., Zhang W. S., **Guo X.*** Exact response bound analysis of truss structures via linear mixed 0-1 programming and sensitivity bounding technique. *International Journal for Numerical Methods in Engineering* 2018, 116(1): 21-42.

66. Zhang W. S., Song J. F., Zhou J. H., Du Z. L., Zhu Y. C., Sun Z., **Guo X.*** Topology optimization with multiple materials via moving morphable component (MMC) method. *International Journal for Numerical Methods in Engineering* 2018, 113(11): 1653-1675.
67. Zhang W. S., **Guo X.***, Wang M. Y., Wei P. Optimal topology design of continuum structures with stress concentration alleviation via level set method. *International Journal for Numerical Methods in Engineering* 2013, 93(9): 942-959.
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70. **Guo X.***, Bai W., Zhang W. S. Extreme structural response analysis of truss structures under material uncertainty via linear mixed 0-1 programming. *International Journal for Numerical Methods in Engineering* 2008, 76(3): 253-277.
71. **Guo X.***, Yamazaki K., Cheng G. D. A new three-point approximation approach for design optimization problems. *International Journal for Numerical Methods in Engineering* 2001, 50(4): 869-884.
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73. Ma C., Li S. S., Xue D. C., Zhu Y. C.*, **Guo X.** An 88-48-88 line MATLAB code for asymptotic homogenisation of spatially varying multiscale configurations. *Structural and Multidisciplinary Optimization* 2025, 68(3): 52.
74. Ren G. B., Cen C., Jiao T. C., Song Z. W., Sun Z.*, **Guo X.** Multiscale topology optimization for fiber-reinforced composites based on moving morphable component (MMC) method. *Structural and Multidisciplinary Optimization* 2025, 68(4): 80.
75. Liu C, Ren Y. B., Zhao S. X., Cao X. L., Guo Y. L., Huo W. D.*, **Guo X.** Hierarchical shape optimization for complex shell structures considering global and local shape perturbations. *Structural and Multidisciplinary Optimization*

- 2025, 68(10): 1-23.
76. Huang M. C., Du Z. L.* , Liu C., Zhang W. S., **Guo X.** A sequential linear programming approach for truss optimization based on the uncertainty analysis-based data-driven computational mechanics (UA-DDCM). *Structural and Multidisciplinary Optimization* 2025, 68(2): 32.
 77. Xu L., Zhang W. S.* , Yao W., Youn S. K., **Guo X.** Machine learning accelerated MMC-based topology optimization for sound quality enhancement of serialized acoustic structures. *Structural and Multidisciplinary Optimization* 2024, 67(5): 85.
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 79. Zhang W. S.* , Zhang S. Q., Youn S. K., **Guo X.** Non-parametric geometry patching technique for MMC topology optimization. *Structural and Multidisciplinary Optimization* 2024, 67(5): 77.
 80. Guo Y. H., Du Z. L. * , Wang L, Meng W., Zhang T. E., Su R. Y., Yang D. S., Tang S., Data-driven topology optimization (DDTO) for three-dimensional continuum structures. *Structural and Multidisciplinary Optimization* 2023, 66(5): 104.
 81. Xue D. C., Zhu Y. C.* , Li S. S., Liu C., Zhang W. S., **Guo X.*** On speeding up an asymptotic-analysis-based homogenisation scheme for designing gradient porous structured materials using a zoning strategy. *Structural and Multidisciplinary Optimization* 2020, 62(2): 457-473.
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 85. Du Z. L., **Guo X.*** Symmetry analysis for structural optimization problems involving reliability measure and bi-modulus materials. *Structural and*

- Multidisciplinary Optimization* 2016, 53(5): 973-984.
86. Ni C. H., Yan J. *, Cheng G. D., **Guo X.** Integrated size and topology optimization of skeletal structures with exact frequency constraints. *Structural and Multidisciplinary Optimization* 2014, 50(1): 113-128.
 87. **Guo X.***, Du Z. L., Cheng G. D. A confirmation of a conjecture on the existence of symmetric optimal solution under multiple loads. *Structural and Multidisciplinary Optimization* 2014, 50(4): 659-661.
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- mechanics. *Computational Mechanics* 2024, 73(4): 943-965.
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 100. Mei Y., Deng J. W., **Guo X.**, S. Goenezen, S. Avril.* Introducing regularization into the virtual fields method (VFM) to identify nonhomogeneous elastic property distributions. *Computational Mechanics* 2021, 67: 1581-1599.
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Academic achievements and activities

Xu Guo has been working in the field of computational mechanics for more than 25 years. His research areas include structural and multidisciplinary optimization, computational mechanics considering uncertainties, variational principles for advanced materials/structures and data-driven computational mechanics. He has published more than 300 journal papers (including 40 papers in CMAME, 16 papers in IJNME, 15 papers in JMPS, 13 papers in IJSS, respectively). His main academic achievements include:

(1) Developed the so-called ϵ – relaxed approach for the solution of singular topology optimization problems (with Prof. Gengdong Cheng) which has been recognized a fundamental contribution to structural topology optimization and has been

cited and applied intensively since its invention (SMO, 1997, 716 google citations).

(2) Established the so-called Moving Morphable Component (MMC) based framework for topology optimization, which has been cited intensively and extended in various ways to solve different kinds of topology optimization problems (JAM, 2014; CMAME, 2016; SMO, 2016, totally 2434 (1340+419+675) google citations of these three papers).

(3) Developed a series of variational principles and the corresponding computational framework for numerical analysis of structures composed by materials with non-smooth behavior, i.e., tension-compression asymmetries (JMPS, 2014, 2020; IJSS, 2016).

(4) Proposed a mechanistic-based data-driven approach for numerical modelling of 3D nonlinear elastic/ elastoplastic problems using 1D experiment data (CMAME, 2019, 2020, 2021, 2022).

(5) Established a series of Semi-Definite Programming (SDP) based formulations that can solve the problem of finding the solutions of structural robust optimization problems in a confidence way, which is believed to be a very challenging issue in the corresponding field (CMAME, 2009, 2013; IJNME, 2011). Besides, some theoretical global optimal solutions for finding the extreme structural responses under interval uncertainties were also obtained in his work for the first time (IJNME, 2008, 2010, 2018). These solutions can serve as benchmarks for testing the accuracy of numerical methods and have long-term academic values.

Xu Guo is very active in promoting the prosperity of the computational mechanics society. He served as the President of the Chinese Association of Computational Mechanics, which has over 600 IACM members and the Vice President of the Chinese Society of Theoretical and Applied Mechanics during 2019-2025. He is now holding the position of Vice-President of the International Society for Structural and Multidisciplinary Optimization (ISSMO)

Xu Guo is the organizer and committee member of a number of academic events related to computational mechanics. In particular, he served as the co-chair of the 13th World Congress of Structural and Multidisciplinary Optimization (WCSMO) which has more 600 participants.

Xu Guo is also active in the editorial work of computational mechanics related journals. He is one of the members of the editorial advisory board of Computer Methods in Applied Mechanics and Engineering and the Associate Editors of ASME-Journal of Mechanical Design and Chinese Journal of Computational Mechanics.

Xu Guo is the recipient of numerous academic awards and honors, including the ASSMO Award, International Chinese Association for Computational Mechanics (ICACM) Award, National Award for Natural Sciences, etc. He is also the Plenary/Semi-Plenary speakers in numerous prestigious international conferences/workshops/symposiums, including the 2016 World Congress on Computational Mechanics (WCCM) and EUROGEN 2021, etc.