Sigong Zhang, Ph.D.

CONTACT INFORMATION

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Newcastle upon Tyne, UK NE1 7RU
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CURRENT ACADEMIC APPOINTMENTS

Lecturer in Structural Engineering, Newcastle University — September 2022 to present
Geotechnical and Structural Engineering (GEST)
School of Engineering

PREVIOUS ACADEMIC APPOINTMENTS

Marie Curie Research Fellow, University of Exeter, UK — October 2020 to September 2022

Postdoctoral Fellow, University of Alberta, Canada — January 2018 to April 2020

Postdoctoral Fellow, University of Waterloo, Canada — March 2017 to October 2017

EDUCATION

PhD in Civil Engineering — January 2017
University of Waterloo — *Waterloo, ON, Canada*
- Thesis: Vibration Serviceability of Cold-Formed Steel Floor Systems

MSc in Structural Engineering — January 2012
Beijing Jiaotong University — *Beijing, China*
- Thesis: Numerical Analysis of Composite Floor Vibration due to Human Walking (in Chinese)

BEng in Civil Engineering — July 2009
Northwestern Polytechnical University — *Xi'an, China*

AWARDS

L. J. Markwardt Wood Engineering Award — 2021
Forest Products Society, United States

Marie Skłodowska-Curie Individual Fellowship — 2020
European Commission

Mitacs Globalink Research Award — 2020
Mitacs, Canada

Mitacs Accelerate Postdoctoral Fellowship — 2018
Mitacs, Canada

GRANTS

[1] Co-PI, "Developing advanced vibration performance assessment for new generation of lightweight pedestrian structures using motion platform and virtual reality environments", **Marie Skłodowska-Curie Individual Fellowship**, ID: 898216, €224,933, October 2020 to October 2022. Co-PI: Stana Zivanovic, University of Exeter, UK

[2] Co-PI, "Structural analysis of innovative mass timber penal-steel composite floors and its application", **Mitacs Globalink**, IT16921, CAD$ 6,000, June 2020 to August 2020 (Cancelled due to COVID-19 pandemic). Co-PI: Takuro Mori, Hiroshima University, Japan

[3] Investigator, "Development of rigging system for prefabricated engineered wood floor panels", **NSERC Engage Grants**, EGP 518307-17, CAD$ 25,000, March 2018 to August 2018. PI: Ying Hei Chui

[4] Investigator, "Investigation of wood I-joists for floor applications in mid-rise wood construction", **Mitacs Accelerate**, FR24772, CAD$ 16,500, January 2018 to July 2018. PI: Ying Hei Chui

Refereed Journal Publications

(∗ Corresponding author)

[1] Lin, B., **Zhang, S.**, Živanović, S., Zhang, Q., and Fan, F. 2023. Verification of damped bipedal inverted pendulum model against kinematic and kinetic data of human walking on rigid-level ground. *Mechanical Systems and Signal Processing*, 200, 110561. doi:10.1016/j.ymssp.2023.110561

[2] Lin, B., Živanović, S., **Zhang, S.**, Zhang, Q., and Fan, F. 2023. Evaluation of compliant walking locomotion models for civil engineering applications. *Journal of Sound and Vibration*, 561, 117815. doi:10.1016/j.jsv.2023.117815

[3] Zhang, Y., Zhang, L. and **Zhang, S.**∗ 2022. Exact series solutions of composite beams with rotationally restrained boundary conditions: static analysis. *Archive of Applied Mechanics*. 92, 3999-4015. doi:10.1007/s00419-022-02277-0

[4] Živanović, S., Lin, B., Dang, H. V., **Zhang, S.**, Ćosić, M., Caprani, C., and Zhang, Q. (2022). Evaluation of inverted-pendulum-with-rigid-legs walking locomotion models for civil engineering applications. *Buildings*, 12(8), 1216. doi:10.3390/buildings12081216

[5] Zhang, L., Zhou, J., **Zhang, S.** and Chui, Y. H. 2022. Bending stiffness prediction to mass timber panel-concrete composite floors with notched connections. *Engineering Structures*. 262, 114354. doi:10.1016/j.engstruct.2022.114354

[6] **Zhang, S.**∗ and Xu, L. 2022. Vibration serviceability evaluation of lightweight cold-formed steel floor systems. *Structures*, 38, 1368-1379. doi:10.1016/j.istruc.2022.02.009

[7] Daneshvar, H., Goni, T., **Zhang, S.**, Kelterborn, R. and Chui, Y. H., 2021. Structural timber design in curricula of Canadian universities: Current status and future needs. *Education Sciences*, 11(12): 765. doi:10.3390/educsci11120765

[8] **Zhang, S.**, Zhou, J. and Chui, Y. H. 2021. Simultaneous evaluation of bending and shear stiffness of wood I-joists by transverse vibration Tests. *Engineering Structures*, 243, 112643. doi:10.1016/j.engstruct.2021.112643

[9] Zhang, L., **Zhang, S.** and Chui, Y. H. 2021. Analytical evaluation to the timber-concrete composite beam connected with notched connections. *Engineering Structures*, 227, 111466. doi:10.1016/j.engstruct.2020.111466

[10] **Zhang, S.**∗, Daneshvar, H. and Chui, Y. H. 2021. Comparison of lateral load performance of light wood diaphragms built with sawn lumber and wood I-joists. *ASCE Journal of Materials in Civil Engineering*, 33(1), 04020422. doi:10.1061/(ASCE)MT.1943-5533.0003544

[11] **Zhang, S.**∗, Chui, Y. H. and Joo, D. 2020. Lateral load performance of panelized wood I-joist floor systems. *Forest Products Journal*, 70(4), 428-438. doi:10.13073/FPJ-D-20-00029

[12] **Zhang, S.**∗ and Chui, Y. H. 2020. Characterizing flexural behaviour of panel-to-panel connections in cross-laminated timber floor systems. *Structures*, 28, 2047-2055. doi:10.1016/j.istruc.2020.10.040

[13] **Zhang, S.**∗ and Xu, L. 2020. Human-induced vibration of cold-formed steel floor systems: Parametric studies. *Advances in Structural Engineering*, 23(10), 2030–2043. doi:10.1177/1369433220904013

[14] **Zhang, S.***, Zhou, J., Niederwestberg, J. and Chui, Y. H. 2019. Effect of end support restraints on vibration performance of cross laminated timber floors: An analytical approach. *Engineering Structures*, 189, 186-194. doi:10.1016/j.engstruct.2019.03.042

[15] Zhang, Y. and **Zhang, S.***. 2019. On the application of modified finite sine transform to structural mechanics. *Mathematical Problems in Engineering*, 6363409. doi:10.1155/2019/6363409

[16] **Zhang, S.**, Xu, L. and Li, R. 2019. New exact series solutions for transverse vibration of rotationally-restrained orthotropic plates. *Applied Mathematical Modelling*, 65, 348-360. doi:10.1016/j.apm.2018.08.033

[17] **Zhang, S.**, and Xu, L. 2018. Determination of orthotropic rigidities of cold-formed steel floor systems in vibration analysis, part I: Theory. *Thin-Walled Structures*, 132, 25-35. doi:10.1016/j.tws.2018.08.001

[18] Xu, L., **Zhang, S.** and Yu, C. 2018. Determination of orthotropic rigidities of cold-formed steel floor systems in vibration analysis, part II: Evaluation of the fundamental frequency. *Thin-Walled Structures*, 132, 1-15. doi:10.1016/j.tws.2018.08.002

[19] **Zhang, S.** and Xu, L., 2018. Exact static analysis of eccentrically stiffened plates with partial composite action. *Composite Structures*, 198, 117-125. doi:10.1016/j.compstruct.2018.05.049

[20] **Zhang, S.** and Xu, L., 2018. Analytical solutions for flexure of rectangular orthotropic plates with opposite rotationally restrained and free edges. *Archives of Civil and Mechanical Engineering*, 18(3), 965-972. doi:10.1016/j.acme.2018.02.005

[21] **Zhang, S.**, Xu, L. and Qin, J., 2017. Vibration of lightweight steel floor systems with occupants: Modelling, formulation and dynamic properties. *Engineering Structures*, 147, 652-665. doi:10.1016/j.engstruct.2017.06.008

[22] **Zhang, S.** and Xu, L., 2017. Bending of rectangular orthotropic thin plates with elastically restrained edges: A finite integral transform solution. *Applied Mathematical Modelling*, 46, 48-62. doi:10.1016/j.apm.2017.01.053

[23] **Zhang, S.** and Yang, N., 2013. Comparison of the numerical stimulation methods of floor vibration due to single people walking. *Journal of Beijing Jiaotong University*, 37(1), 152-161. (In Chinese)

Conference Publications & Presentation

[1] **Zhang, S.**, Lin, B., Williams, G., and Živanović, S. 2023. Experimental insight into human footfall loading for walking on vibrating surfaces. Proceedings of XII International Conference on Structural Dynamics (EURODYN2023), Delft, the Netherlands.

[2] Zheng, L., **Zhang, S.**, Gong, M. and Chui, Y. H. 2023. Evaluation of the Structural Performance of Shear Walls Built with Multi-layer Composite Laminated Panels. Proceedings of World Conference on Timber Engineering 2023 (WCTE2023), Oslo, Norway. doi:10.52202/069179-0332

[3] **Zhang, S.**, Živanović, S., and Williams, G. 2023. vPERFORM: the development of footfall loading models for human walking on vibrating surfaces. Proceedings of IMAC-XLI, Austin, Texas.

[4] Zhang, L., **Zhang, S.**, Zhou, J. and Chui, Y. H. 2021. Analytical Assessment to the timber-concrete composite floors with discrete semi-rigid connections. 2021 World Conference on Timber Engineering (WCTE2021), August 9-12, Santiago, Chile.

[5] **Zhang, S.*** 2020. Three generations of Canadian design guidelines for vibration serviceability of timber floors. The 3rd International Conference on Engineering Innovation and Seismic Mitigation of Bridges (ICEISMB 2020), November 21-22, Online, China.

[6] **Zhang, S.***, Chui, Y. H., Joo, D., Letarte, JP., and Dalcastagne, L. 2019. Development of rigging system for prefabricated wood I-joist floor panels. Modular and Offsite Construction (MOC) 2019, May 21-24, Banff, AB, Canada.

[7] **Zhang, S.***, Chui, Y. H. and Joo, D. 2019. Lateral performance of panel-to-panel connections in panelized wood I-joists floor systems. Modular and Offsite Construction (MOC) 2019, May 21-24, Banff, AB, Canada.

[8] **Zhang, S.** and Xu, L. 2018. Human-structure interaction in cold-formed steel floor systems: An analytical perspective. Wei-Wen Yu International Specialty Conference on Cold-Formed Steel Structures 2018, November 7-8, St. Louis, Missouri, USA.

[9] **Zhang, S.** and Chui, Y. H. 2018. Fastener row factors for wood I-joist diaphragms in mid-rise wood construction. 4th Annual Structures Graduate Students Conference, September 7, Edmonton, AB, Canada.

[10] **Zhang, S.** and Xu, L. 2017. Equivalent stiffness of cold-formed steel floor systems for vibration performance assessment. International Conference on Composite Structures (ICCS20), September 4-7, Paris, France.

[11] **Zhang, S.** and Xu, L., 2016. Fundamental frequency of lightweight cold-formed steel floor systems. In *Dynamics of Coupled Structures*, Volume 4, 137-145. doi:10.1007/978-3-319-29763-7_14

[12] **Zhang, S.**, Yang, N., Wang, Y., and Dong, C. 2011. Numerical analysis of long-span floor vibration due to crowd synchronized walking. In Fifth International Symposium on Environmental Vibration. October 20-22, Chengdu, China.

TEACHING EXPERIENCE

Newcastle University, Newcastle upon Tyne, the UK

Instructor **September 2022 to present**

- ENG2015 Mechanics II
- CEG3301 Design of Building Systems

University of Exeter, Exeter, the UK

Instructor **March 2022 to August 2022**

- ECMM108 Advanced Structural Engineering