

Professor Bin ZHU

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I'm currently the Vice-director of Geotechnical Engineering Institute of Zhejiang University and Deputy Vice-director of Center for Hypergravity Experimental and Interdisciplinary Research of Zhejiang University. This center is in charge of constructing and operating the largest hypergravity facility of the world—Centrifugal Hypergravity and Interdisciplinary Experiment Facility (CHIEF). In 2019 I was awarded the title of Distinguished Professor of Cheung Kong Scholars Program by the Ministry of Education of China. I am also a corresponding member of ISSMGE TC104 Physical Modeling, International Society for Soil Mechanics and Geotechnical Engineering, editorial board member of International Journal of Physical Modelling in Geotechnics and Chinese Journal of Geotechnical Engineering.

My main research interest is on offshore geotechnical engineering through centrifuge modelling and numerical modelling, primarily on offshore wind turbine foundations and pipelines. The main findings have been adopted in the design of more than 60 projects in China, covering foundations of wind turbines and transmission towers, excavations and pipelines. So far I have published over 140 technical papers in journals and proceedings, and some model derived from my research results have been adopted as guidelines in 4 national and industrial design codes.

EDUCATION

- 2002-2005: PhD, Department of Civil and Architectural Engineering, City University of Hong Kong
- 1995-2002: Bachelor and MPhil, Department of Civil Engineering, Zhejiang University

WORK EXPERIENCE

- 2021-present: Director of Discipline Construction Department and Academic Degree Evaluation Committee Office, Graduate School of Zhejiang University
- 2016-2021: Vice-dean College of Civil Engineering and Architecture, Zhejiang University
- 2015-present: Vice-director of Institute of Geotechnical Engineering, Zhejiang University
- 2017-present: Deputy Vice-director of Center for Hypergravity Experimental and Interdisciplinary Research
- 2014.01-2014.04: Senior visiting scholar, Centre for Offshore Foundation Systems, University of Western Australia
- 2013-present: Professor, Department of Civil Engineering, Zhejiang University
- 2009-2010: Visiting scholar, Department of Engineering Science, Oxford University
- 2005-2012: Associate professor, teaching assistant, lecturer, Department of Civil Engineering, Zhejiang University

AWARDS

- The key technology and application of safety monitoring and controlling in hypergravity experiment of major coastal geotechnical engineering, the first class Prize of Zhejiang Science and Technology Progress Award, 2018. (1/10)
- Environmental soil mechanics mechanism of city solid waste landfill site and key technology application of disaster prevention and control, the second class Prize of National Science and Technology Progress Award, 2012. (4/10)
- Key technology and engineering application of disaster control and resource recovery in city solid waste landfill site, the first class Prize of Zhejiang Science and Technology Progress Award, 2011. (3/10)
- Key technology and engineering application of offshore high-rise structure foundation and anti-collision system, 2nd Prize of Science Technology Improvement Award in Higher Institution, 2011. (2/10)
- Disaster evaluation method, control technology and engineering application of soft soil foundation, the first class Prize of Zhejiang Science and Technology Progress Award, 2008. (4/10)

SELECTED PROJECTS

1. Experimental apparatus simulating gas migration and disaster in deep sea soils, National Natural Science Foundation of China (No. 52127815), 2022.1-2026.12, RMB 6, 620, 000. Principal Investigator
2. Phase evolution of multiphase media under hypergravity, National Natural Science Foundation of China (No. 51988101), 2020.1-2024.12, RMB 3, 000, 000. Principal Investigator
3. Centrifuge model tests and facilities, Zhejiang provincial government special project, 2019.1-2022.12, RMB 15, 000, 000. Principal Investigator
4. Centrifuge model tests on multi-field coupling behaviours within offshore geotechnical media and corresponding failure mechanism of seabed facilities, Natural science foundation of Zhejiang province, 2019.1-2023.12, RMB 650, 000. Principal Investigator
5. Mechanism and prevention of wave-induced liquefaction of ratcheting-densified seabed around mono-pile foundations for offshore wind turbines, National Natural Science Foundation of China (No. 51679211), 2017.01-2020.12, RMB 630, 000. Principal Investigator
6. Long-term cyclic behaviors and the corresponding controlling measures of suction caisson foundations, National Natural Science Foundation of China (No. 51179169), 2012.01-2015.12, RMB 570, 000. Principal Investigator
7. Centrifugal hyper-gravity experiment facility designed for simulation of geotechnical catastrophe induced by extreme climate and environment, Special Fund for Research on Instruments of the National Natural Science Foundation of China (No. 51127005), 2012.01-2015.12, RMB 500, 000 (out of 2, 800, 000). Co-investigator
8. Analysis of pile-soil interaction under different marine environments, Research Programs of China Energy Engineering Group Guangdong Electric Power Design Institute Company Limited, 2011-2016, RMB 785, 000. Principal Investigator
9. Study on cyclic accumulated deflection characteristics of large-diameter mono-pile for offshore wind turbines, National Natural Science Foundation of China (No. 50979097), 2010.01-2012.12, RMB 340, 000. Principal Investigator

10. Study on dynamic interaction of pile-soil system and the anti-collision mechanism during pier collision, National Natural Science Foundation (No. 50608062), 2007.01-2009.12, RMB 260,000. Principal Investigator

SELECTED PUBLICATIONS (*for corresponding author)

1. **Zhu B**, Ren J, Yuan S M, Zhu J S, Yang Q J, Gao Y F and Kong D. Q*. (2021). Centrifuge Modeling of Monotonic and Cyclic Lateral Behavior of Monopiles in Sand. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 147(8): 04021058.
2. **Zhu B**, Ye Z G, Wang L J*, Xu W J, Kong D Q, Nagel T, Kolditz O and Chen Y M. (2021). Theoretical Investigation into Thermo-Osmosis and Thermofiltration Effects on Hydromechanical Behavior of Saturated Soils. *Journal of Engineering Mechanics*, ASCE, 147(4): 04021005.
3. Kong D Q, Zhu J S, Long Y W, **Zhu B***, Yang Q J, Gao Y F and Chen Y M. (2021). Centrifuge modelling on monotonic and cyclic lateral behaviour of monopiles in kaolin clay. *Géotechnique*. published online: <https://doi.org/10.1680/jgeot.19.P.402>.
4. **Zhu B**, Dai J L and Kong D Q (*). (2020). Modelling T-bar penetration in soft clay using large displacement sequential limit analysis. *Géotechnique*, 72(2): 173-180. (doi: 10.1680/geot.18.P.160).
5. Wang L J, **Zhu B** (*), Chen Y M, Chen R P and Shi X S. (2019). Precise model for predicting excess pore-water pressure of layered soils induced by thermal-mechanical loads. *Journal of Engineering Mechanics*, ASCE., 145(1): 04018114.
6. Kong D Q, Wen K, **Zhu B** (*), Zhu Z J and Chen Y M. (2019). Centrifuge modelling of cyclic lateral behaviors of a tetrapod piled jacket foundation for offshore wind turbines in sand. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 145(11): 04019099. (doi:10.1061/(ASCE)GT.1943-5606.0002160).
7. **Zhu B**, Wen K, Li T, Wang L J and Kong D Q (*). (2019). Experimental study on lateral pile-soil interaction of offshore tetrapod piled jacket foundations in sand. *Canadian Geotechnical Journal* (doi: 10.1139/cgj-2018-0292).
8. **Zhu B**, Dai J L, Kong D Q (*), Feng L Y and Chen Y M. (2019). Centrifuge modelling of uplift response of suction caisson groups in soft clay. *Canadian Geotechnical Journal* (doi: 10.1139/cgj-2018-0838).
9. Chen Y M, Li J C, Yang C B, **Zhu B** (*) and Zhan L T. (2017). Centrifuge modeling of municipal solid waste landfill failures induced by rising water levels. *Canadian Geotechnical Journal*, 2017, 54(12): 1739-1751.
10. **Zhu B** (*), Li T, Xiong G and Liu J C. (2016). Centrifuge model tests on laterally loaded piles in sand. *International Journal of Physical Modelling in Geotechnics*, 2016, 16(4): 1-13.
11. Chen R P, **Zhu B** (*) and Ni W J. (2016). Uplift tests on full-scale pipe segment in lumpy soft clay backfill. *Canadian Geotechnical Journal*, 2016.4, 53(4): 578-588
12. **Zhu B**, Sun Y X, Yang Y Y, Chen R P (*), Guo W D and Chen Y M. (2015). Experimental and analytical models of laterally loaded rigid monopiles with hardening p-y curves. *Journal of Waterway, Port, Coastal, and Ocean Engineering*, ASCE, 2015, 141(6)
13. Chen R P, Sun Y X, **Zhu B** (*) and Guo W D. (2015). Lateral cyclic pile-soil interaction studies on a rigid model. *ICE-Geotechnical Engineering*, 2015, 168(2): 120-130.

14. **Zhu B** (*), Zhang W L, Ying P P and Chen Y M. (2014). Deflection-based bearing capacity of suction caisson foundations of offshore wind turbines. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 2014, 140(5).
15. **Zhu B**, Byrne B W (*) and Houlsby G T. (2013). Long-Term Lateral Cyclic Response of Suction Caisson Foundations in Sand, *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 2013, 139(1): 73~83.
16. **Zhu B**, Chen R P (*), Guo J F, Kong L G and Chen Y M. (2012). Large-Scale Modeling and Theoretical Investigation of Lateral Collisions on Elevated Piles. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 2012, 138(4): 461-471.
17. **Zhu B**, Chen R P (*), Chen Y M and Zhang Z H. (2012). Impact model tests and simplified analysis for flexible pile-supported protective structures withstanding vessel collisions. *Journal of Waterway Port Coastal and Ocean Engineering*, ASCE, 2012, 138(2): 86-96.
18. **Zhu B** (*), Kong D Q, Chen R P, Kong L G and Chen Y M. (2011). Installation and lateral loading tests of suction caissons in silt. *Canadian Geotechnical Journal*, 48(7): 1070-1084.