

# **Dr Sam Stanier MEng PhD**

University Senior Lecturer in Civil Engineering  
University of Cambridge, Department of Engineering  
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## **EDUCATION**

2011 – Ph.D. in Geotechnical Engineering – University of Sheffield, UK  
2007 – M.Eng. (1<sup>st</sup> Class) in Civil Engineering – University of Sheffield, UK

## **APPOINTMENTS**

2018 to present – University Senior Lecturer in Civil Engineering, University of Cambridge, UK  
2017 to 2019 – ARC DECRA Fellow, Centre for Offshore Foundation Systems (COFS), University of Western Australia (UWA), Australia  
2015 to 2017 – Research Fellow, COFS, UWA, Australia  
2011 to 2014 – Research Associate, COFS, UWA, Australia

## **RESEARCH INTERESTS**

- Offshore geomechanics (e.g. pipelines, sliding foundations and jack-ups)
- Novel site investigation sensors (e.g. shallow penetrometers and parkable piezoprobe)
- Image-based deformation measurement techniques
- Soft soil behaviour and constitutive models for strength evolution
- Large deformation numerical analysis
- Strain localization in strain-softening-hardening materials
- The whole-life response of geotechnical structures

## **AWARDS AND HONOURS**

2018 ICE Telford Premium for the International Journal of Physical Modelling in Geotechnics  
2017 Australian Research Council Discovery Early Career Researcher Award (ARC DECRA) Fellowship. *One of only two hundred awarded nationally in all fields of research and the only one in the field of geotechnical engineering in the year of the award.*  
2016 Canadian Geotechnical Journal 'Editor's Choice'  
2013 Australian Gas Innovation Award (Pre-Commercial) – Shallow penetrometers  
2007 Jacobs Babbie Prize for 'Best Individual Project' – School of Civil and Structural Engineering, University of Sheffield  
2007 Institution of Civil Engineers (ICE) Student Prize – School of Civil and Structural Engineering, University of Sheffield

## **PUBLICATION SUMMARY**

Journal articles: 35      Conference articles: 18  
Total citations: 703      Citations since 2014: 679      h-index: 14

*Published widely in leading journals in the field of geotechnical engineering, including:*

*7 articles in Géotechnique; 4 in Géotechnique Letters; 4 in Canadian Geotechnical Journal (one of which was named as an 'Editor's Choice' for 2016); 2 in Computers and Geotechnics; 3 in ASCE Journal of Geotechnical and Geoenvironmental Engineering; and 6 in the International Journal of Physical Modelling in Geotechnics.*

## JOURNAL ARTICLES

- J35 Zhou, Z., O'Loughlin, C.D., White, D.J. & **Stanier, S.A.** (2019). Improvements in plate anchor capacity due to cyclic and maintained loads combined with consolidation. Accepted for publication in *Géotechnique*.
- J34 Schneider, M.A., **Stanier, S.A.**, White, D.J. & Randolph, M.F. (2019). Shallow penetrometer tests-theoretical and experimental modelling of the rotation stage. Accepted for publication in *Canadian Geotechnical Journal*.
- J33 O'Loughlin, C.D., Zhou, Z., **Stanier, S.A.** & White, D.J. (2019). Load-controlled cyclic T-bar tests: a new method to assess the combined effects of cyclic loading and consolidation. *Géotechnique Letters*, 9(3): 1-22. doi: 10.1680/jgele.19.00030.
- J32 O'Loughlin, C.D., Cocjin, M.L., Gourvenec, S.M. & **Stanier, S.A.** (2019). A simple approach to multi-degree-of-freedom loading in a geotechnical centrifuge. *Geotechnical Testing Journal*, 42. doi: 10.1520/GTJ20180037.
- J31 O'Loughlin, C.D., Zhou, Z., **Stanier, S.A.** & White, D.J. (2019). Load-controlled cyclic T-bar tests: a new method to assess the combined effects of cyclic loading and consolidation. *Géotechnique Letters*, 9(3): 1-22. doi: 10.1680/jgele.19.00030.
- J30 Schneider, M.A., **Stanier, S.A.**, White, D.J. & Randolph, M.F. (2019). Shallow penetrometer tests-theoretical and experimental modelling of penetration and dissipation stages. *Canadian Geotechnical Journal*, ahead of print online. doi: 10.1139/cgj-2018-0656.
- J29 Schneider, M.A., **Stanier, S.A.**, White, D.J. & Randolph, M.F. (2019). Apparatus for measuring pipe-soil interaction behavior using shallow 'pipe-like' shallow penetrometers. *Geotechnical Testing Journal*, 43(3). doi: 10.1520/GTJ20180293.
- J28 Ragni, R., Bienen, B., **Stanier, S.A.**, O'Loughlin, C.D. & Cassidy, M.J. (2019). Observations during suction bucket installation in sand. *International journal of physical modelling in geotechnics*. Ahead of print online. doi: 10.1680/jphmg.18.00071.
- J27 Schneider, M.A., **Stanier, S.A.**, Chatterjee, S., White, D.J. & Randolph, M.F. (2018). The parkable piezoprobe for determining  $c_v$  and strength – modelling and interpretation techniques. *Géotechnique*, 69(5): 458-469. doi: 10.1680/jgeot.18.P.004.
- J26 **Stanier, S.A.** & White, D.J. (2018). Enhancement of bearing capacity from consolidation: due to changing strength or failure mechanism? *Géotechnique*, 69(2): 166-173. doi: 10.1680/jgeot.17.t.030.
- J25 Hambleton, J.P. & **Stanier, S.A.** (2017). Predicting wheel forces using bearing capacity theory for general planar loads. *International Journal of Vehicle Performance*, doi: 10.1504/IJVP.2017.10002328.
- J24 Ullah, S.N., **Stanier, S.A.**, White, D.J. & Hu, Y. (2017). Foundation punch-through in clay with sand: centrifuge modelling. *Géotechnique*, 67(10): 870-889, doi: 10.1680/jgeot.16.P.100.
- J23 Teng, Y., **Stanier, S.A.** & Gourvenec, S. (2017). Synchronised multi-scale image analysis of soil deformations. *International Journal of Physical Modelling in Geotechnics*, 17(1): 53-71. doi:10.1680/jphmg.15.00058.
- J22 Ullah, S.N., **Stanier, S.A.**, White, D.J. & Hu, Y. (2016). Foundation punch-through in clay with sand: analytical modelling. *Géotechnique*, 67(10):870-889, doi:10.1680/jgeot.16.P.101.
- J21 Ragni, R., Wang, D., Mašín, D., Bienen, B., Cassidy, M.J. & **Stanier, S.A.** (2016). Numerical modelling of the effects of consolidation on jack-up spudcan penetration. *Computers and Geotechnics*, ahead of print online, doi:10.1016/j.compgeo.2016.05.002.
- J20 Ullah, S.N, Hu, Y., **Stanier, S.A.** & White, D.J. (2016). Lateral boundary effects in centrifuge foundation tests. *International Journal of Physical Modelling in Geotechnics*, ahead of print online, doi:10.1680/jphmg.15.00034.
- J19 **Stanier, S.A.**, Dijkstra, J., Lesniewska, D., Hambleton, J., White, D.J. & Muir Wood, D. (2016). Vermiculate artefacts in image analysis of granular materials. *Computers and Geotechnics*, 72: 100-113, doi:10.1016/j.compgeo.2015.11.013.

- J18 **Stanier, S.A.**, Blaber, J., Take, W.A. & White, D.J. (2016). Improved image-based deformation measurement for geotechnical applications. *Canadian Geotechnical Journal*, 53: 1-13, doi:10.1139/cgj-2015-0253.
- J17 Hu, P., **Stanier, S.A.**, Wang, D. & Cassidy, M.J. (2015). Effect of footing shape on penetration in sand overlying clay. *International Journal of Physical Modelling in Geotechnics*, doi:10.1680/jphmg.15.00013.
- J16 Hu, P., **Stanier, S.A.**, Wang, D. & Cassidy, M.J. (2015). A comparison of full profile prediction methods for a spudcan penetrating sand overlying clay. *Géotechnique Letters*, 5(3): 131-139, doi:10.1680/jgele.15.00051.
- J15 Hu, P., Wang, D., **Stanier, S.A.** & Cassidy, M.J. (2015). Assessing the punch-through hazard of a spudcan on sand overlying clay. *Géotechnique*, 65(11): 883-896, doi:10.1680/jgeot.14.P.097.
- J14 Bienen, B., Ragni, R., Cassidy, M.J. & **Stanier, S.A.** (2015). Effects of consolidation under a penetrating footing in carbonate silty clay. *Journal of Geotechnical and Geoenvironmental Engineering*, 141(9): 1-15, doi:10.1061/(ASCE)GT.1943-5606.0001339.
- J13 **Stanier, S.A.**, White, D.J., Chatterjee, S., Brunning, P. & Randolph, M.F. (2015). A tool for ROV-based seabed friction measurement. *Applied Ocean Research*, 50: 155-162, doi:10.1016/j.apor.2015.01.016.
- J12 Hambleton, J.P., **Stanier, S.A.**, Gaudin, C. & Todeshejoei, C. (2014). Analysis of installation forces for helical piles in clay. *Australian Geomechanics Society*, 49(4): 73-80.
- J11 Hambleton, J.P., **Stanier, S.A.**, White, D.J. & Sloan, S.W. (2014). Modelling ploughing and cutting processes in soils. *Australian Geomechanics Society*, 49(4): 147-156.
- J10 Ullah, S.N., Hu, Y., White, D.J. & **Stanier, S.A.** (2014). Lateral boundary effect in centrifuge tests for spudcan penetration in uniform clay. *Applied Mechanics and Materials*, 553: 458-463, doi:10.4028/www.scientific.net/AMM.553.458.
- J9 **Stanier, S.A.**, Ragni, R., Bienen, B., & Cassidy, M.J. (2014). Observing the effects of sustained loading on a spudcan footing in clay. *Géotechnique*, 64(11): 918-926, doi:10.1680/geot.1-4.003.
- J8 **Stanier, S.A.** & White, D.J. (2014). Shallow penetrometer penetration resistance. *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 141(3): 1-12, doi:10.1061/(ASCE)GT.1943-5606.0001257.
- J7 Ullah, S.N., Hu, Y., White, D.J. & **Stanier, S.A.** (2014). LDFE study of bottom boundary effects in foundation model tests. *International Journal of Physical Modelling in Geotechnics*, 14(3): 80-87, doi:10.1680/ijpmg.14.00004.
- J6 Hu, P., Wang, D., Cassidy, M.J. & **Stanier, S.A.** (2014). Predicting the resistance profile of a spudcan penetrating sand overlying clay. *Canadian Geotechnical Journal*, 51(10): 1151-1164, doi:10.1139/cgj-2013-0374.
- J5 Hu, P., **Stanier, S.A.**, Cassidy, M.J. & Wang, D. (2014). Predicting the peak punch-through resistance of a spudcan penetrating sand overlying clay. *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 140(2): 1-12, doi:10.1061/GT.1943-5606.0001016.
- J4 **Stanier, S.A.** & White, D.J. (2013). Improved image based deformation measurement for the centrifuge environment. *Geotechnical Testing Journal*, 36(6): 915-927, doi:10.1520/GTJ20140044.
- J3 **Stanier, S.A.**, Black, J.A. & Hird, C.C. (2013). Modelling helical screw piles in clay and design implications. *Geotechnical Engineering*, 167(5): 447-460, doi:10.1680/geng.13.00021.
- J2 **Stanier, S.A.** & Tarantino, A. (2013). An approach for predicting the stability of vertical cuts in cohesionless soils above the water table. *Journal of Engineering Geology*, 148(5): 98-108, doi:10.1016/j.enggeo.2013.03.012.
- J1 **Stanier, S.A.**, Black, J.A. & Hird, C.C. (2012). Enhancing accuracy and precision of transparent synthetic soil modelling. *International Journal of Physical Modelling in Geotechnics*, 12(4): 162-175, doi:10.1680/ijpmg.12.00005.

## CONFERENCE ARTICLES

- C18 Hambleton, J.P. & **Stanier, S.A.** (2019). Linking the installation response of screw piles to soil strength and ultimate capacity. ISSPEA 2019, Dundee, UK.
- C17 Randolph, M.F., **Stanier, S.A.**, O'Loughlin, C.D., Chow, S.H., Bienen, B., Doherty, J.P. Mohr, H., Ragni, R., Schneider, M.A., White, D.J. & Schneider, J.A. (2018). Penetrometer equipment and testing techniques for offshore design of foundations, anchors and pipelines. 4<sup>th</sup> International Symposium on Cone Penetration Testing (CPT'18), Delft, The Netherlands.
- C16 Ragni, R., Bienen, B., **Stanier, S.A.**, Cassidy, M.J. & O'Loughlin, C.D. (2018). Visualisation of mechanisms governing suction bucket installation in dense sand. 9<sup>th</sup> International Conference on Physical Modelling in Geotechnics, ICPMG 2018, London, UK.
- C15 Teng, Y., **Stanier, S.A.** & Gourvenec, S.M. (2017). Analysis of failure mechanisms in silica and carbonate sands beneath a strip foundation under vertical loading. ASME 2017 36<sup>th</sup> International Conference on Ocean, Offshore and Arctic Engineering, Madrid, Spain.
- C14 White, D.J., **Stanier, S.A.**, Schneider, M.A., O'Loughlin, C.D., Chow, S.H., Randolph, M.F., Draper, S.D., Mohr, H & Morton, J. (2017). Remote intelligent geotechnical seabed surveys – technology emerging from the RIGSS JIP. 2017 SUT OSIG Conference, London, UK.
- C13 O'Loughlin, C.D., White, D.J. & **Stanier, S.A.** (2017). Plate anchors for mooring floating facilities – a view towards unlocking cost and risk benefits. 2017 SUT OSIG Conference, London, UK.
- C12 Gourvenec, S.G., **Stanier, S.A.** & White, D.J. (2017). Whole-life assessment of subsea shallow foundation capacity. 2017 SUT OSIG Conference, London, UK.
- C11 Hu, P., Cassidy, M. J., Wang, D. & **Stanier, S. A.** (2015). Spudcan penetration analysis for three case histories in sand overlying clay. Proceedings of Jack-Up Conference 2015. London, UK.
- C10 O'Loughlin, C.D., White, D.J. & **Stanier, S.A.** (2015). Novel anchoring solutions for FLNG-opportunities driven by scale. Offshore Technology Conference, Houston, Texas, USA.
- C9 Kashizadeh, E., Hambleton, J.P. & **Stanier, S.A.** (2014). A numerical approach for modelling the ploughing process in sands. Proceedings of the 14<sup>th</sup> International Conference of the International Association for Computer Methods and Advances in Geomechanics, Kyoto, Japan.
- C8 Todeshekejei, C., Hambleton, J.P., **Stanier, S.A.** & Gaudin, C. (2014). Modelling installation of helical anchors in clay. Proceedings of the 14<sup>th</sup> International Conference of the International Association for Computer Methods and Advances in Geomechanics, Kyoto, Japan.
- C7 **Stanier, S.A.**, Breen, J. & White, D.J. (2014). A compact high-speed image capture system for a drum centrifuge. Proceedings of the 8<sup>th</sup> International Conference on Physical Modelling in Geotechnics, Perth, Australia. pp 241-246.
- C6 Ullah, S.N., **Stanier, S.A.**, White, D.J. & Hu, Y. (2014). Using the 'step zero' approach to design a centrifuge modelling program. Proceedings of the 8<sup>th</sup> International Conference on Physical Modelling in Geotechnics, Perth, Australia, pp 397-403.
- C5 Ullah, S.N., Hu, Y., White, D.J. & **Stanier, S.A.** (2013). Lateral boundary effect in centrifuge tests for spudcan penetration in uniform clay. Proceedings of the 1<sup>st</sup> Australasian Conference on Computational Mechanics (ACCM 2013), Sydney, Australia.
- C4 **Stanier, S.A.**, Hu, P., Cassidy, M.J. & Wang, D. (2012). Calibration of a model to predict the peak punch-through penetration resistance of a spudcan on sand overlying clay. Proceedings of the 2<sup>nd</sup> European Conference on Physical Modelling in Geotechnics (Eurofuge 2012), Delft, Netherlands.
- C3 **Stanier, S. A.** & Tarantino, A. (2010). Active earth pressure in 'cohesionless' unsaturated soils using bound theorems of plasticity. Proceedings of the 5<sup>th</sup> International Conference on Unsaturated Soils, Barcelona, Spain, pp 1081-1086.
- C2 Hird, C.C. & **Stanier, S.A.** (2010). Modelling helical screw piles in clay using a transparent soil. Proceedings of the 7<sup>th</sup> International Conference on Physical Modelling in Geotechnics, Zurich, Switzerland. pp 769-774.

- C1 Black, J.A., **Stanier, S.A.** & Clarke, S.D. (2009). Shear wave velocity measurement of Kaolin during undrained unconsolidated triaxial compression. Proceedings of the 62<sup>nd</sup> Canadian Geotechnical Conference, Halifax, Canada.

## RESEARCH FUNDING

**Total: \$3.04M AUD (~£1.7M) – P: Principal investigator; C: Co-investigator**

2019	£18k	(P)	Shallow penetrometers: the next generation. CSIC Internal Funding.
2019	\$83k	(C)	Application of RIGSS JIP penetrometer system on Browse survey samples provided by Woodside.
2019	\$100k	(C)	Application of RIGSS JIP penetrometer system on Scarborough survey samples provided by Woodside.
2018	\$61k AUD	(P)	Application of RIGSS JIP penetrometer system on West African samples provided by Woodside.
2018	\$443k AUD	(C)	Design of suction piles for submarine systems under combined loading and deep water geotechnical conditions. Instituto Mexicano del Petróleo (IMP).
2017	\$280k AUD	(C)	A 21st century laboratory testing device for geotechnical engineering. ARC Discovery Project DP180100973.
2017	\$220k AUD	(P)	Deployment of RIGSS JIP penetrometer system on the Total Absheron Survey.
2017	\$110k AUD	(P)	Deployment of RIGSS JIP penetrometer system on the Shell Crux Survey.
2017	\$360k AUD	(P)	Unlocking the changing strength of fine-grained soils in numerical analysis. ARC DECRA Fellowship DE170100119.
2014	\$975k AUD	(C)	Remote Intelligent Geotechnical Seabed Surveys (RIGSS) JIP.
2013	\$20k AUD	(P)	Development of shallow penetrometer technology for Remotely Operated Vehicle based seabed property measurement.
2012	\$65k AUD	(C)	Seabed friction on carbonate soils - ROV mounted data gathering.
2012	\$300k AUD	(C)	A national facility for in-situ testing of soft soils. ARC LIEF Grant LE130100028.

## TEACHING EXPERIENCE

### Undergraduate:

Structural Design Course (CUED) – Lecturer – 2018 to present

*First year short course introducing structural design principles via a team-based steel bridge building competition.*

Structural Analysis & Stability (CUED) – Unit coordinator – 2018 to 2019

*Third year elective unit on the stability of asymmetric sections and buckling.*

Offshore Geomechanics (UWA) – Unit coordinator – 2017 to 2019

*Final year Master of Professional Engineering elective course in offshore geomechanics. Developed as an intensive mode 'flipped classroom' course with contact time used for small group tutorials and project work. Received excellent student survey feedback, achieving a score of 3.58 out of 4.00 in 2017, which is in the 88<sup>th</sup> percentile across all units at UWA.*

Environmental Geotechnics (UWA) – Lecturer – 2014 to 2016

*Final year Master of Professional Engineering elective course in Environmental Geotechnics. Developed and delivered course material (lectures and tutorials) on the fundamentals of seepage flow and dam design.*

Offshore Geomechanics (UWA) – Lecturer – 2011 to 2012

*Third / fourth year Bachelor / Master of Engineering elective course in offshore geomechanics. Developed and delivered course material (lectures and tutorials) on jack-up foundation behaviour and anchors.*

### **Project Supervision:**

Currently co-supervising 3 PhD students and 2 Master's level project students.

Previously co-supervised 6 PhD students, 1 MPhil student and 5 Master's level student projects through to successful completion.

### **Industry courses:**

“Modelling of suction caisson performance” – Lecturer – 2018

*A five day short course for visitors from the Instituto Mexicano del Petróleo (IMP) on modelling geotechnical problems using the centrifuge and advanced numerical techniques.*

“Seabed to Surface” – Lecturer – 2017 to present

*An industry short course to ~40 delegates on offshore oil and gas production systems and geotechnical design interfaces and challenges.*

“An Introduction to Offshore Geotechnical Engineering” – Lecturer – 2016

*A three day short course on offshore geotechnical engineering delivered to ~45 delegates at the Oil and Natural Gas Corporation (ONGC) in Mumbai, India.*

### **ADMINISTRATION AND SERVICE**

- Editorial board member for Canadian Geotechnical Journal and the International Journal for Physical Modelling in Geotechnics.
- Reviewer for: *Géotechnique*, *Géotechnique Letters*, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, *Canadian Geotechnical Journal*, *Computers and Geotechnics*, *ASTM Geotechnical Testing Journal*, *ICE Geotechnical Engineering*, *International Journal of Physical Modelling in Geotechnics and Environmental Geotechnics*...
- Review editor and session chair for the 8<sup>th</sup> International Conference on Physical Modelling in Geotechnics.
- SUT Offshore Site Investigation and Geotechnics Perth branch (OSIGp) committee member.

### **INVITED LECTURES**

- 2019 Freeware PIV/DIC for geotechnical modelling: new advances and applications using GeoPIV-RG'. TC104 (Physical Modelling) technical committee workshop at the XVII European Conference on Soil Mechanics and Geotechnical Engineering in Reykjavik
- 2019 Soil strength: a moving target. ICE Cambridge Chapter Technical Evening, Cambridge, UK.
- 2019 Soil strength: a moving target. University of Oxford, Oxford, UK.
- 2018 Soil strength: a moving target. University of Cambridge, Cambridge, UK.
- 2018 Soil strength: a moving target in numerical analysis. Northwestern University, Chicago, USA.
- 2017 The first deployment of the RIGSS JIP shallow penetrometers. Society for Underwater Technology (SUT) Offshore Site Investigation and Geotechnics Perth (OSIGp) Movie Night, Perth, Australia.
- 2017 The whole-life geotechnical capacity of the seabed: can we reduce the size of foundations and anchors? Woodside, Perth, Australia.
- 2016 RIGSS, DIGS and safely engineering around geohazards. SUT Evening Technical Meeting, Perth, Australia.
- 2014 Interpretation of shallow penetrometer measurements for deep-water locations. 2014 Lloyd's Register Foundation Oration, Perth, Australia.
- 2010 Failure mechanics of helical screw piles using transparent soil. 9<sup>th</sup> BGA Annual Conference, ICE Headquarters, One Great George Street, London, UK.

## REFEREES

Professor David White  
Professor of Infrastructure  
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University of Southampton  
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