SWAPNADIP DE CHOWDHURY

CONTACT INFORMATION
☎+91-3222-284832
✉ dcswapnadip@gmail.com

RESEARCH INTERESTS
computational hydrodynamics, wave-structure interactions, wave energy conversion, multiphase CFD simulations.

EDUCATION

Indian Institute of Technology Madras, Chennai, India

Ph.D., Ocean Engineering, July 2014

- Thesis Title: *SPH simulation of nonlinear water waves*
- Advisor: Professor S. A. Sannasiraj, Ph.D

Jalpaiguri Government Engineering College, Jalpaiguri, India

B.Tech, Mechanical Engineering, August 2009

EXPERIENCE

Assistant Professor Grade I October 2021 to Till Date
Department of Ocean Engineering and Naval Architecture
IIT Kharagpur, India

Catastrophe Risk Modeller, Storm Surge August 2019 to April 2021
Risk Management Solutions Ltd branch London, UK

Research Associate June 2018 to August 2019
Centre for Mathematical Modelling and Flow Analysis,
Manchester Metropolitan University, Manchester, UK

Postdoctoral Research Fellow April 2015 to April 2018
Department of Mechanical and Product Design Engineering,
Swinburne University of Technology, Melbourne, Australia

Senior Project Officer October 2014 April 2015
Deparment of Ocean Engineering,
Indian Institute of Technology Madras, Chennai, India

Postdoctoral Research Fellow May 2014 to October 2014
Deparment of Ocean Engineering,
Indian Institute of Technology Madras, Chennai, India

REFEREED JOURNAL PUBLICATIONS

1. **De Chowdhury, S.**, Sannasiraj, S.A. "Numerical Simulation of Solitary waves using Smoothed particle Hydrodynamics method." *International Journal of Ocean and Climate systems*, 3(3):187–202, 2012.
2. **De Chowdhury, S.**, Sannasiraj, S.A. "SPH simulation of shallow water wave propagation." *Ocean Engineering*, 60:41–52, 2013.
3. **De Chowdhury, S.**, Sannasiraj, S.A. "Numerical Simulation of 2D Sloshing Waves Using SPH With Diffusive Terms." *Applied Ocean Research*, 47:219–240, 2014.
4. **De Chowdhury, S.**, Anand, K.V., Sannasiraj, S.A., Sundar, S. "Nonlinear wave interaction with curved front seawalls". *Ocean Engineering*, 140:84–96, 2017.

5. **De Chowdhury, S.**, Manasseh, R. "Behaviour of Eigenmodes of an array of Oscillating Water Column Devices." *Wave Motion*, 74:56–72, 2017.

6. **De Chowdhury, S.**, Zhou, J.G., Khait, A., Causon, D. Qian, L., Mingham, C. Pullen, T. "Local overshoot and wind effects on wave overtopping at vertical coastal structures." *Proceedings of the Institution of Civil Engineers - Maritime Engineering*, Accepted for publication, 2021.

Manuscript under preparation

1. **De Chowdhury, S.**, Bennetts, L., Manasseh, R. "Computation of complex resonances in array of floating cylinders".

Unpublished Work

1. **De Chowdhury, S.**, Nader, J-R., Madrigal Sanchez A., Fleming A., Winship B., Illesinghe, S., Toffoli, A., Babanin, A., Penesis, I., Manasseh, R. "A review of hydrodynamic invetsigations into arrays of ocean wave energy converters". arxiv.org, 2015.

Refereed papers in Conference Proceedings

1. **De Chowdhury, S.**, Sannasiraj, S.A. "SPH simulation of sloshing due to horizontal tank excitation". 2nd International conference on particle-based methods, fundamentals and application, PARTICLES'011, Barcelona, Spain. October 2011.

2. **De Chowdhury, S.**, Sannasiraj, S.A. "Numerical simulation of water waves using SPH method". 8th international conference on coastal and port engineering in developing countries, COPEDEC 2012, Chennai, India. February, 2012.

3. **De Chowdhury, S.**, Sannasiraj, S.A. "Numerical Simulations of 2D Wave Impact Pressures Using SPH Schemes". 23rd Offshore (Ocean) Polar Engineering Conference (ISOPE 2013), Anchorage, Alaska, USA, July, 2013.

4. **De Chowdhury, S.**, Sannasiraj, S.A. "Numerical Simulation of Wave Overtopping Using Meshfree SPH Method". 35th IAHR World Congress. Chengdu, People Republic China, September, 2013.

5. **De Chowdhury, S.**, Sannasiraj, S.A. "Comparison between incompressible and weakly compressible SPH schemes in simulating breaking wave impact. HYDRO 2013 International, conference on Hydraulics, Water resources, coastal and Environmental Engineering, Chennai, India. December 2013.

6. **De Chowdhury, S.**, Sannasiraj, S.A. "A Study on Wave Overtopping and Sea Wall Stability Using SPH Schemes". 24th Offshore (Ocean) Polar Engineering Conference (ISOPE 2014), Busan, Korea, June, 2014.

7. Penesis, I., Manasseh, R., Nader Jean-Roch, **De Chowdhury, S.**, Felming, A., Macfarlane Gregor, Kamrul Hasan, Md. "Peformance of Ocean Wave-Energy Arrays in Australia". 3rd Asian Wave and Tidal Energy Conference, Singapore, Octover, 2016.

8. **De Chowdhury, S.**, De La Cruz Raven, Huynh Tung Vinh, Winship Brian, Manasseh Richard. "Computation of power from an array of wave energy converters using a boundary element method". 20th Australasian Fluid Mechanics Conference (AFMC), Perth, Western Australia, December, 2016.

9. Manasseh, R., Hasan, M.K. and **De Chowdhury, S.** "Nonlinear behaviour of interacting oscillating water columns". 20th Australasian Fluid Mechanics Conference (AFMC), Perth, Western Australia, December, 2016.

10. Manasseh R., Kamrul Hasan, Md., Leontini J., Puticiu Liviu, **De Chowdhury, S.** "Effects of machine nonlinearity on the performance of idealised wave-energy converters". 12th European Wave and Tidal Energy Conference, Cork, Ireland, August 2017.

11. **De Chowdhury, S.**, Pullen, T., Hu, K., Russel, M., Manson, S., Silva, E., Winter, H., Stewart, D., Wood, M., Causon, D., Qian, L., Mingham, C., Chen, H., Lin, Z. and Zhou, J.G. "Investigation of Wind Effects on Wave Overtopping at Sea Defences". Coastal Structures Conference, Hannover, Germany, 2019.

12. **De Chowdhury, S.**, Zhou, J. G., Qian, L., Causon, D., Mingham, C., Pullen, T., Hu, K., Russel, M., Manson, S., Stewart, D., Wood, M., Joly, A. "Wind effects on wave overtopping at the vertical sea defence". Coastal Engineering Conference (virtual), 2020.

Papers in national conferences/ workshops

1. **De Chowdhury, S.**, Sannasiraj, S.A. "A Comparative study on different SPH methods for simulating 2D wave impact pressures. Natioanal Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO-2012), Indian Institue of Technology Bombay, India, December 2012.

2. **De Chowdhury, S.**, Sannasiraj, S.A. " Application of sloSPHing2D for Numerical Simulation of Sloshing. Naval Research Board (India) Worskhop on Numerical Simulation of Nonlinear Free Surface Waves. Indian Institue of Technology Madras, India, March 2013.

3. Manasseh R., **De Chowdhury, S.** "Development of analytical models for exact calculations of interactions in an array of wave energy converters". 1st Indo-Australian Marine Renewable Energy Workshop. Indian Institue of Technology Madras, India, April 2016.

4. **De Chowdhury, S.**, Manasseh R. "Behaviour of Eigenmodes of an Array of Oscillating Wave Energy Converters". Australian Ocean Renewable Energy Symposium, Melbourne, Australia, October 2016.

5. Manasseh R., **De Chowdhury, S.** "Generic monopolar and dipolar interactions between wave energy converters". Australian Ocean Renewable Energy Symposium, Melbourne, Australia, October 2016.

6. Sasikala N., Sannasiraj S.A., **De Chowdhury, S.**, Manasseh R. "Interaction between two floating bodies in surface waves using SPH". Australian Ocean Renewable Energy Symposium, Melbourne, Australia, October 2016.

7. **De Chowdhury, S.**, Manasseh R. "Assesment of WEC Array power in Australia". 2nd Indo-Australian Marine Renewable Energy Workshop. Indian Institue of Technology Madras, India, February 2018.

8. Manasseh, R., **De Chowdhury, S.**, Kamrul Hassan, Md., Penesis, I., Fleming, A., Macfarlane, G., Nader, J.R. 2018. "Performance of arrays of generic wave energy converters around the Australian continent". 2nd Australian Ocean Renewable Energy Symposium. University of Western Australia, Australia, November 2018.

Technical Reports

1. "Protection of Vaan Island: Wave Dynamics Study". Final Report for the client *Suganthi Devadason Marine Research Institue, Tuticorin.* January, 2015.

2. "D4.1 A guide to using the Software Tool". Technical Deliverable for the Australian Renewable Energy Agency, July, 2017.

3. "Quantitative Assessment tool for wind effects on wave overtopping seawalls". Final report submitted to Natural Environment Research Council (NERC), UK.

4. "Effect of sea-level rise in North American Hurricane Model". Final project report for sea-level rise project at RMS.

Awards

Travel Awards

- International Travel Support Scheme (ITS) sponsored by the Department of Science and Technology (DST), Government of India, to attaned 23rd ISOPE held in Anchorage, Alaska, USA. july 2013.

Student Awards

- PIANC-COPEDEC IIT Madras Best Student Paper Award February 2012

Student Awards — Indian Institute of Technology Madras

- Institute Postdoctoral Fellowship May 2014–October 2014
  - This award while applied is considered for students for completing their PhD thesis before the end of the stipulated time in IIT Madras. This provides a short term (for six months) support for full time research.

Computational Skills

Operating Systems

- Windows®, Linux (Ubuntu, Centos).

Programming languages

- FORTRAN, MATLAB®, Python, C, R, C++.

Open Source Numerical Models

- SPHysics, MPARS, SWAN, NEMOH, OpenFOAM.

Invited Reviewer

- Ocean Engineering
- Internatioanl Journal of Naval Architecture and Ocean Engineering
- International Journal of Marine Energy
- Journal of Marine Science and Technology
- Energy
- ISH Journal of Hydraulic Engineering
- Fluids, Water (MDPI)
- Proceedings of the International Ocean (Offshore) and Polar Engineering Conference (ISOPE)

Undergraduate Thesis Supervision

- Blake Lachlan, Minter Joshua. "Assessment of small Scale Laboratory Model of Oscillating Water Column Arrays". MEE4009 Final Year Research Project 2 (Mechanical) Final Report. Swinburne University of Technology. Co supervisor: Professor R. Manasseh
- Huynh Tung Vinh, de la Cruz Raven."Numerical analysis of arrays of Wave Energy Converters". Final Year Research Project 2 (Mechanical) Final Report. Swinburne University of Technology. Co supervisor: Professor R. Manasseh

Service

Member of the Organizing Committee, 1st Indo-Australian Marine Renewable Energy Workshop, IIT Madras, Chennai, India. April 2016

- Conducting review of the submitted papers.
- Assist with planning of the Technical Sessions.

Session co-organizer for the session "Wave Modelling" in the Coastal Engineering Conference (virtual) 2020.