FY 2025 Annual Report

Unit Name

Marine Physics and Engineering Unit

Associate Professor Amin Chabchoub

Research Personnel

Zibo Zheng, Postdoctoral Scholar

Ottavio Mattia Mazzaretto , Postdoctoral Scholar

Yiu Wang Jason Tang, PhD Student

Anito Marcarelli, Research Intern

Yohann Calixte Dezauzier, Research Intern

Aleksandr Paraskun, Research Intern

Scholarly Contributions and Creative Productions (by Faculty)

Conference Proceedings

1. Chabchoub, A.

   Numerical Modelling of Extreme Wave Interactions with a Vertical Cylinder Using a Particle-Based Method. In Coastal Engineering Proceedings; 2025; Vol. 38, p 77.

Journal Article

1. Chabchoub, A.

   Homogenized Korteweg–de Vries and Boussinesq Models for Anisotropic Propagation of Solitary Waves over a Structured Bathymetry. Journal of Fluid Mechanics 2025, 1024, A43.

2. Chabchoub, A.

   Fundamental Hydrodynamic Breathers on Standing Waves. Physica D: Nonlinear Phenomena 2025, 448, 135098.

Presentation at Conference

1. Chabchoub, A.

   Generation of Deterministic and Directional Localized Waves in a Basin. Tsinghua Sanya International Mathematics Forum 2026 2026.

2. Chabchoub, A.

   Observation of Manakov-Type Solitons and Breathers. KOZWaves 2026 2026.

3. Chabchoub, A.

   Modulation Instability of Stokes Waves and Rogue Waves. OIST × JST Complex Flow Workshop 2025.

4. Chabchoub, A.

   The Hydrodynamics of Extreme Wave Events. OIST-Keio Showcase Talk Series 8 2025.

5. Chabchoub, A.

   Modeling Ocean Processes in the Lab. CITYUHK–OIST RESEARCH SYNERGY: SHAPING THE FUTURE THROUGH SCIENCE AND INNOVATION 2025.

Seminars

1. Chabchoub, A.
   Breathers and Rogue Waves Across Physical Systems. 2025.
   https://physics.wsu.edu/colloquium-fall25/
2. Chabchoub, A.
   Hydrodynamics of Manakov-Type Solitons and Breathers.
3. Chabchoub, A.
   Ocean Surface Dynamics: Modeling and Prediction of Extreme Events. 2025.
4. Chabchoub, A.
   Extreme Sea Dynamics within the Framework of Weakly Nonlinear Evolution Equations . 2025.
5. Chabchoub, A.
   Extreme Sea Dynamics within the Framework of Weakly Nonlinear Evolution Equations. 2025.

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Year Pub
Ottavio Mazzaretto	Presentation at Conference	WAVE SYSTEMS AROUND OKINAWA & BEYOND	OIST x I2CNER, Kyushu University, Joint Symposium	2025
Ottavio Mazzaretto	Presentation at Conference	MetOcean Assessment Around Okinawa	OISTxTohokuU Marine Science Workshop	2026

External Service

Term 3 2025 - Ongoing	Editor - Journal of Nonlinear Waves, Cambridge University Press [Fiscal Year: 2025]
Term 1 2024 - Ongoing	Visiting Researcher, The University of Tokyo [Fiscal Year: 2025]
Term 2 2024 - Ongoing	Honorary Associate Professor, The University of Melbourne [Fiscal Year: 2025]
Term 3 2022 - Ongoing	Editor - Results in Physics , Elsevier [Fiscal Year: 2025]
Term 2 2022 - Ongoing	Editor - Frontiers in Physics, Frontiers Media [Fiscal Year: 2025]
Term 2 2021 - Ongoing	Hakubi Fellow, Kyoto University [Fiscal Year: 2025]
Term 2 2019 - Ongoing	Editor - Ocean Dynamics, Springer [Fiscal Year: 2025]

Workshops and Seminars [Organized and Hosted by Faculty/Units]

Speaker Name(s)	Title	Location	Date
Prof. Kuang-An Chang (Texas A&M)	Wind-Generated Waves in the Laboratory: Turbulent Flow Fields and Interfacial Stresses	OIST	2025
Dr. Francois Guillard (USYD)	Deciphering geomaterial degradation instability with the help of dynamic radiography	OIST	2025
Prof. Kim Pham (ENSTA)	Homogenized Boussinesq and Korteweg-De Vries models for anisotropic propagation of water waves over a structured ridge	OIST	2025
Dr. Agnes Maurel (ESPCI / CNRS)	Theoretical and experimental evidence of negative refraction of water waves in elliptic and hyperbolic regimes	OIST	2025
Prof. Norbert Hoffmann (TUHH / ICL)	Gravity wave propagation by physics informed neural networks: nonlinear Schrödinger equations and potential flow	OIST	2025