

# Junior Researcher Mentoring Programme

2023

<b>Code:</b>	JRMP2023_08
<b>School / Department:</b>	Department of Civil and Environmental Engineering
<b>Name of Research Team Member(s):</b>	Dr Wang Jinghua, Assistant Professor Mr Chen Qianyue, Research Assistant
<b>Research Topic:</b>	An Innovative Hybrid Wind-Wave Breaker for Coastal Protection
<b>Short Description of the Research Project:</b>	<p>To overcome the land scarcity challenges, the Hong Kong government has come up with many land reclamation projects in the coastal regions. Such constructions are well-known for their adverse impacts on the ambient environments. An alternative approach is to employ the floating building concept, which can minimise the environmental impacts on the surrounding areas, while providing an adaptive solution to sea level rise. However, like many coastal cities around the world, Hong Kong is also susceptible to tropical cyclones, which impose substantial threats to the operational safety and structural integrity of the floating buildings. To enhance their resilience to strong wind and waves, an effective hybrid wind-wave breaker is in demand.</p> <p>This project aims to propose an innovative design of a hybrid wind-wave breaker to reduce the typhoon-induced influences on floating buildings or other coastal infrastructures. The effectiveness of the breaker will be investigated through conducting physical experiments in the Eco-Hydraulic Laboratory at PolyU and using state-of-the-art Computational Fluids Dynamics (CFD) numerical modelling.</p>

	<p>The participating students will be involved in the following activities under the supervision of the mentors:</p> <ol style="list-style-type: none"> <li>1) Design, setup and conduct the physical experiments in the laboratory; Collect the associated data and analyse the measurements;</li> <li>2) Simulate the interactions of wind, wave and breaker interactions under different working conditions using the CFD software: Validate the numerical model; Collect and analyse the numerical results; and</li> <li>3) Optimise the design of the hybrid wind-wave breaker to enhance its capability.</li> </ol>
<b>No. of Places Offered:</b>	2
<b>Frequency of Meetings:</b>	Bi-weekly
<b>Special Requirement(s):</b>	Nil

*\* The information presented above is subject to change.*