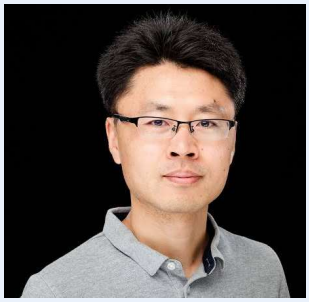
# 海岸和近海工程国家重点实验室
# 学术讲堂

**题　目：** Stability of concrete mattress: applications in offshore engineering



**报告人：** Dr. Hongwei AN

**时　间：** 2023年06月30日 15:00-16:00

**地　点：** 海动A301会议室 &
腾讯会议房间号：775 8184 2394

## 内容简介：

Hongwei An is a senior lecturer at the University of Western Australia (UWA). He received his PhD degree from UWA in 2010 and since then he has been working there as an academic staff. Hongwei's research interests includes mainly flow-structure interactions and local scour with applications in offshore engineering through both numerical simulations and laboratory testing. Hongwei has published 60 peer reviewed journal articles and 50 conference papers. He has worked on more than 40 industrial projects and his research outcome has been widely used to solve challenges in offshore engineering. For example, through the StablePipe JIP, he worked with colleagues from UWA and developed a new guideline for designing pipelines on erodible seabed, and the guideline has been endorsed by DNV. Hongwei also involved in designing Australia first deep water ROV through a CRCp project.

Abstract: A physical model testing method to determine the hydrodynamic force coefficients and stability of concrete mattress is proposed. The test setup is simple, comprising of a pulley system that is able to pull the concrete mattress at a constant speed in either direction relative to the flow (e.g. with the flow direction or against the flow direction) and one load cell to measure the force required to pull the mattress. Writing the equations of load balance for two different pulling directions allows the force coefficients to be deduced. The testing method is designed in such a way that it overcomes the difficulty of isolating the concrete mattress from the flat bed often experienced in conventional flume tests for measuring hydrodynamic forces on structures founded on a solid surface. A series of flume tests have been conducted to demonstrate the validity of the proposed method. It is expected the proposed testing method is applicable to a wide range of structures, bed surfaces and flow conditions.

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2023年06月30日

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