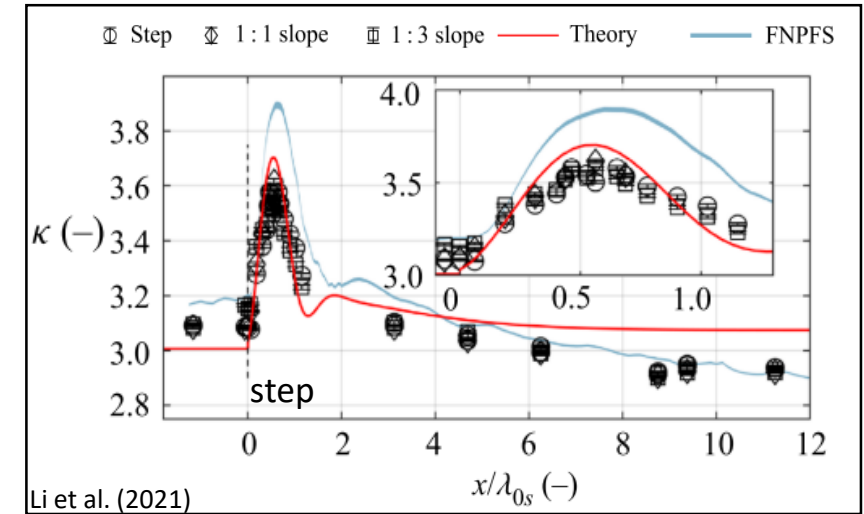


Directionally Spread Surface Wavepackets subject to an Abrupt Depth Transition (ADT)

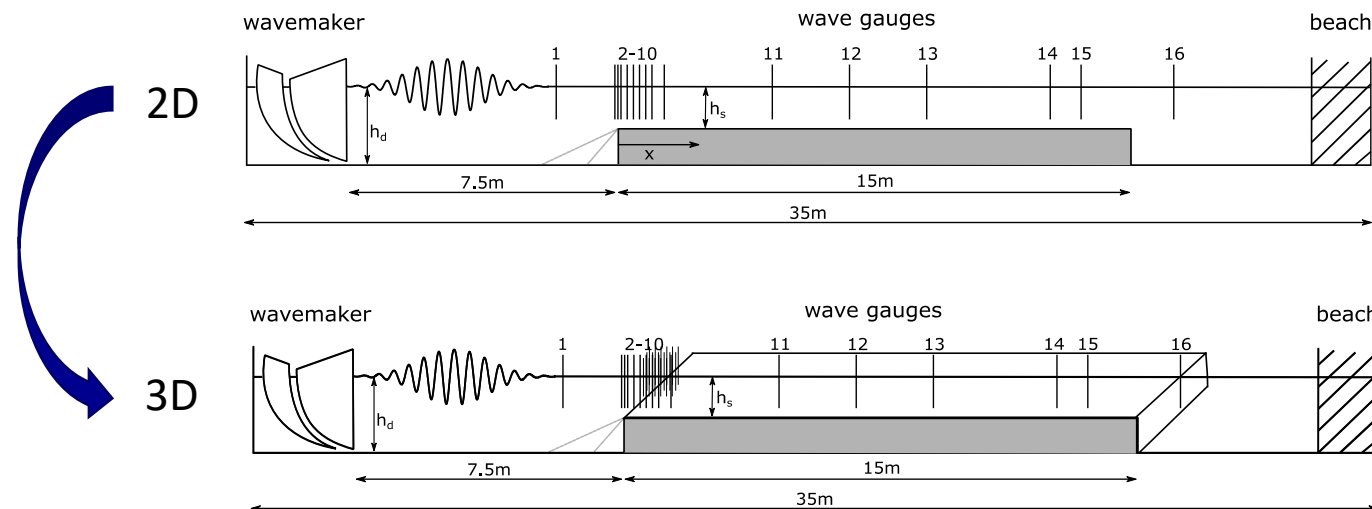
Background

- Recent work has shown that rogue waves can occur due to ADTs
- Shown to be a result of a second-order beating phenomenon caused by free wave release at the ADT
- Understanding **limited to 2D** waves with normal incidence



Aim

- Increase realism of conditions and extend understanding to **oblique** and **directionally spread** wave conditions
- New experiments carried out in the Manchester Wide Flume
 - Funding sought to build the false floor



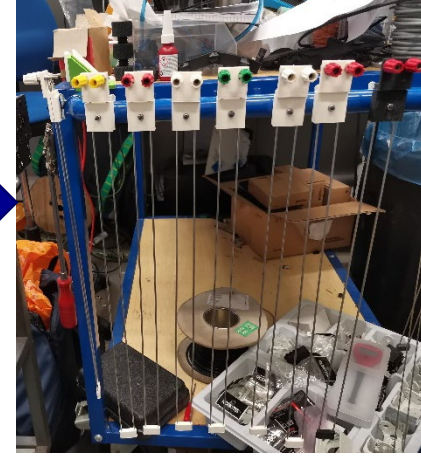
Progress and preliminary results



Floor construction



Floor installed



Gauges constructed



Set-up finalised

Summary of tests completed

- Focused groups with varying water depths (kd), steepness (ka), incident angles (θ) and directional spreading (σ_θ)
- Irregular waves with different σ_θ values

Research focus areas

- The generation, nature and role of higher harmonics
- The effect of directionality on the free-wave release and subsequent interaction on the shallower side
- The role of directional spreading on the statistics of extreme waves over an ADT

Example results: effect of steepness and directionality on peak elevation and harmonic amplitudes

