

Smartwave

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Experimental testing in wave tank facilities is key to many design tasks in offshore and marine engineering. Often the aim is to recreate conditions at a particular field site, or a given sequence of waves which may have been observed to cause damage, like overtopping events.

Providing the right input to a physical or numerical wavemaker to obtain a given wave is not trivial. Recent progress has shown that analytical methods of at least second order accuracy are required.

Smartwave aims at exploring the use of machine learning methods to improve the calibration of wavemakers and enable the calibration of water waves for situations for which no analytical solution exists, like wave-current interaction.

The ECR funding allowed me to plan and execute an experimental campaign in the wave current flume at IH Cantabria between 9/6/2022 and 23/6/2022. Current data was recorded using a single Nortek Vectrino Profiler and surface elevation was sampled at six positions along the tank. Overall, more than 160h of data were recorded for wave only and wave-current conditions and are now being processed.

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Figure 1: Lateral view on the Nortek Vectrino Profiler and wave probe



Figure 2: View from the end of the flume tank