



A Numerical Investigation into the Tuning of an Oscillating Water Column (OWC)

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Aims & Objectives



The Sperboy™ Oscillating Water Column (OWC)

The Numerical Model

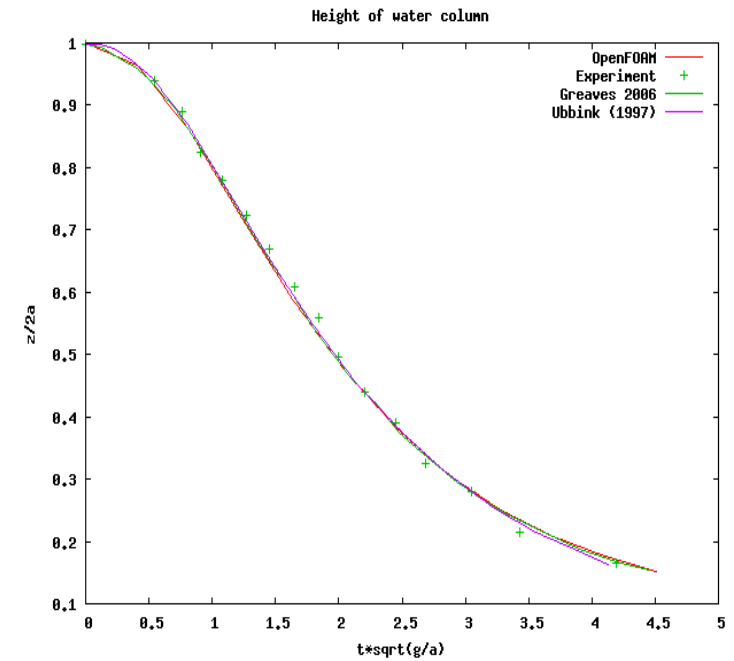
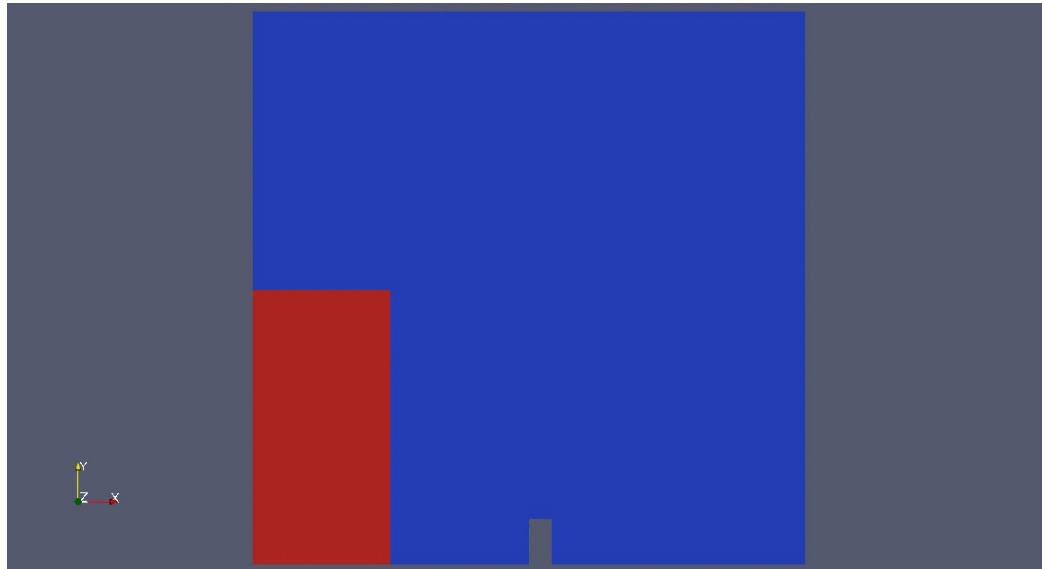


OpenFOAM® – The open source CFD toolbox

- Open Field Operation and Manipulation
- Free and open source
- Toolbox, not black box
- Versatile and very powerful

InterFoam is a solver for 2 incompressible, isothermal immiscible fluids using a VOF (volume of fluid) phase-fraction based interface capturing approach

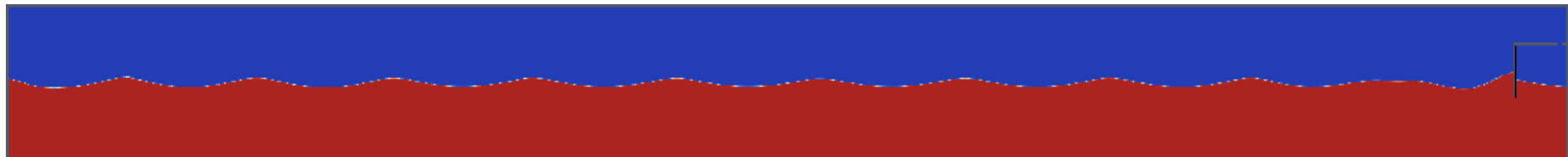
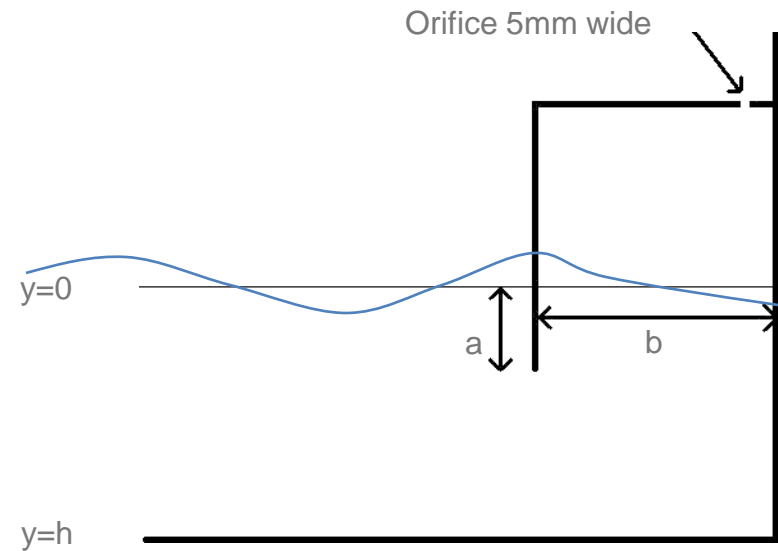
Model Validation



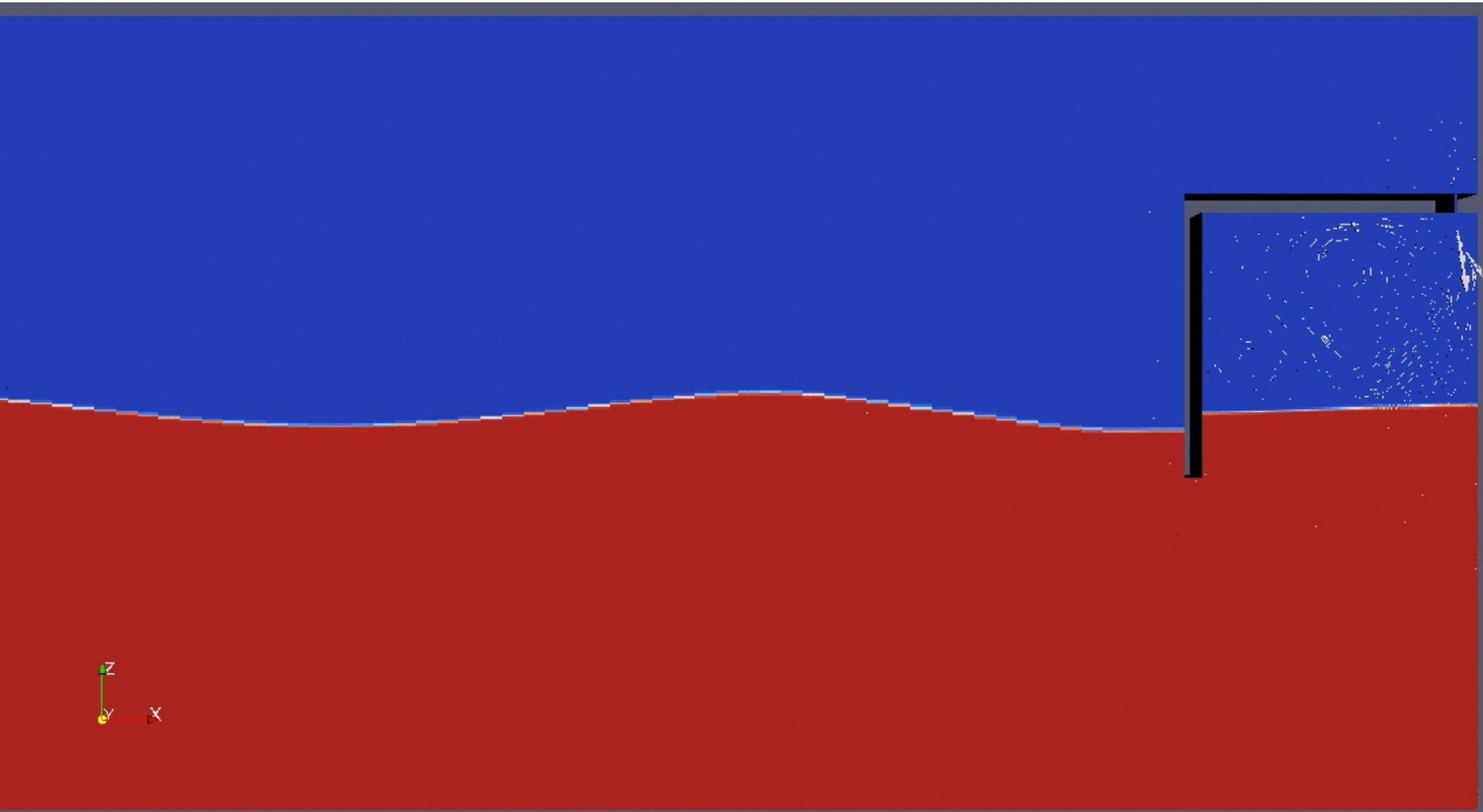
Fixed OWC - Model Layout



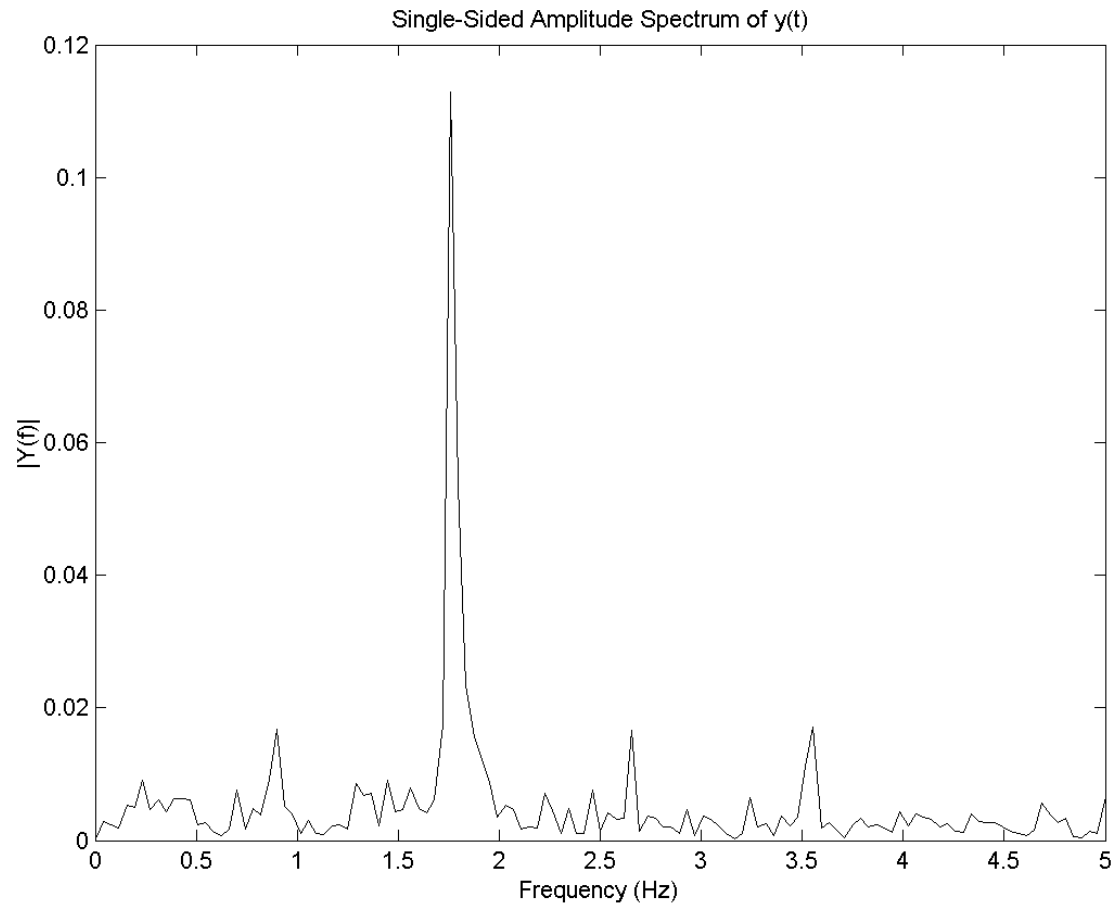
- 2D channel, 19.82m long
- Orifice 5mm wide
- Wave steepness range
 $ak = 0.01$ to 0.22
- Water depth 0.92m
- $a = 0.15\text{m}$ $b = 0.64\text{m}$



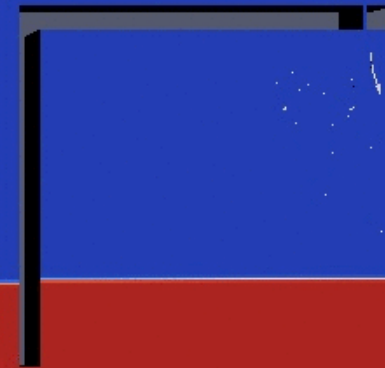
Wave Height 0.031m, Length 2m



Fourier Analysis



Wave Height 0.031m, Length 5m



Wave Height 0.031m, Length 1.28m

