

The effect of modes of motion on optimal wave energy converter geometry

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Abstract

The optimal geometry for wave energy converters has been studied with the goal of finding an economically competitive design, which at the same time enables maximal power extraction. The research question in the present study is: How do the number and combination of modes of motion for the device oscillation affect the optimal device shape?

Some examples of optimal shapes for different combinations of modes of motion are shown in Figure 1.

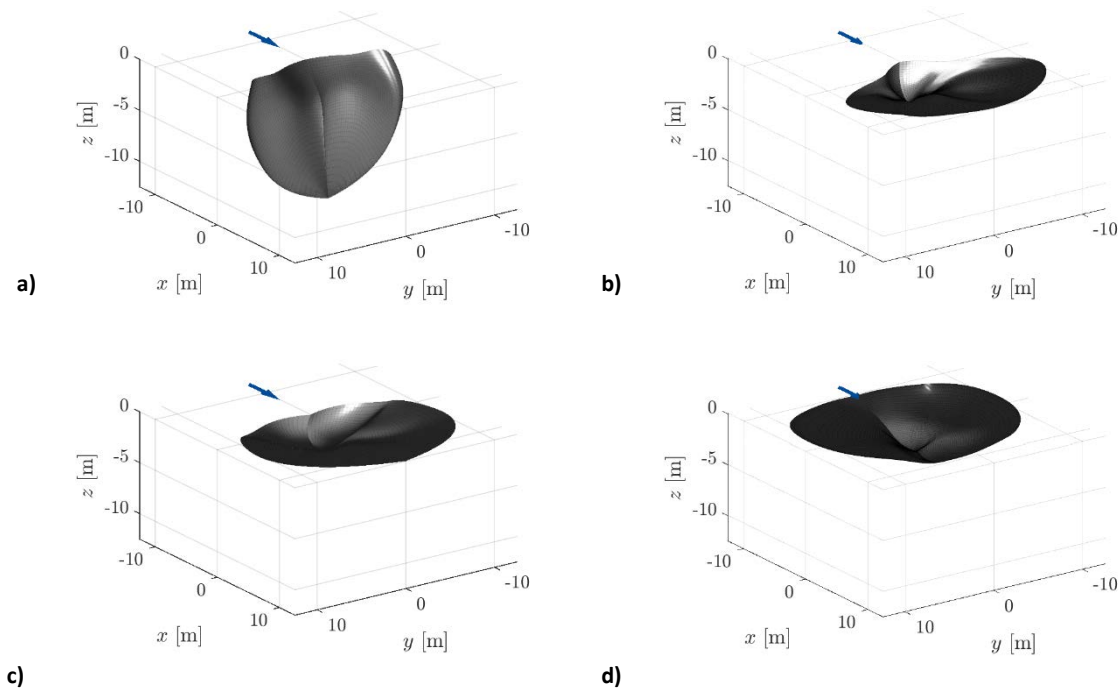


Figure 1: Optimised shapes for a device oscillating in: a) Surge, b) Pitch, c) Surge and Heave, d) Surge, Heave and Pitch

References

- [1] A. McCabe "Constrained optimization of the shape of a wave energy collector by genetic algorithm," vol. 51, Renewable Energy, 2013, pp. 274-284