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MODELLING AND SIMULATION OF AN OWC

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Abstract

In this work we present the mathematical model and simulations of a particular wave energy converter, the so-called oscillating water column. In this device, waves governed by the one- dimensional nonlinear shallow water equations arrive from offshore, encounter a step in the bottom and then arrive into a chamber to change the volume of the air to activate the turbine. The system is reformulated as two transmission problems: one is related to the wave motion over the stepped topography and the other one is related to the wave-structure interaction at the entrance of the chamber. We finally use Riemann invariants to discretize the transmission conditions and the Lax-Friedrichs scheme to get numerical solutions.

Main references

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Auteurs principaux: VERGARA-HERMOSILLA, Gaston; HE, Yiao; BOCCHI, Edoardo

Orateur: VERGARA-HERMOSILLA, Gaston

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