

Turbulent wakes of emergent cylinders subject to strong shear-layers: flow characterization and drag determination

Summary

The research is oriented towards the physical characterization of hydrodynamics of emergent-cylinder wakes, subject to shear layers. Experimental work took place at LNEC, at the compound-channel facility, aiming at the characterization of the wake past emergent cylinders, under the influence of the presence of the interfacial shear-layer that is typical in a compound-channel flow. Experimental tests involved different configurations of positioning of emergent cylinders in the flow.

Results will, comprising the mean-flow field and turbulence, as well as the drag force exerted on the cylinders, allowed to characterize hydrodynamic actions on buildings in the floodplain of rivers. The main volume of data consists of three-dimensional instantaneous-velocity time series that were acquired by means of Acoustic Doppler Velocimetry (ADV).

Keywords

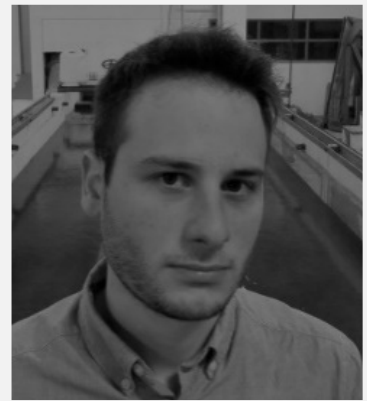
Open-channel flow, compound channel, shear layer, cylinder, drag, mean flow, turbulence, experimental tests, acoustic doppler velocimeter, hydrodynamics.



Upstream view of the compound-channel facility.



Probationary test with emergent circular cylinder.



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